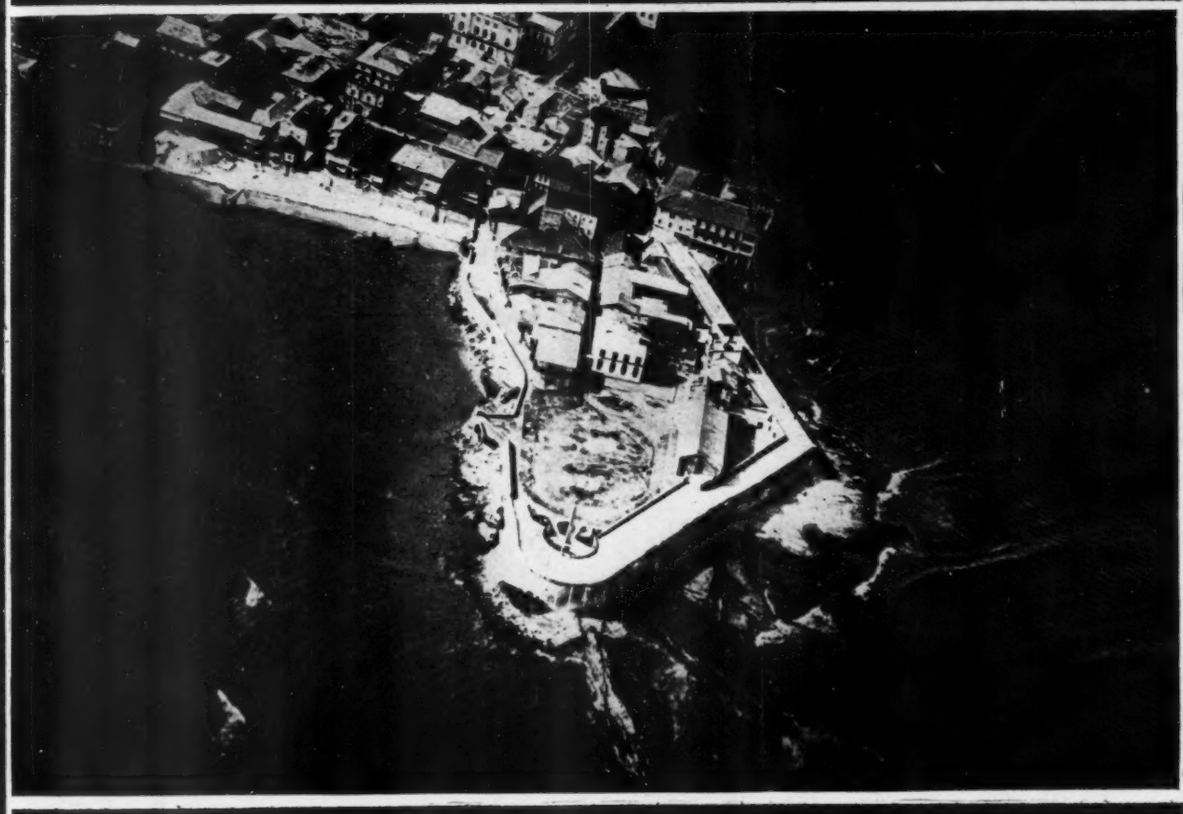
AVIATION

JULY 9, 1923 Issued Weekly PRICE 10 CENTS



Aerial view of old fortifications at Panama City

VOLUME XV

NUMBER 2

SPECIAL FEATURES

DESCRIPTION OF THE BARLING BOMBER

PROPOSED INTERNATIONAL AIRCRAFT CODE

ORGANIZING THE NATIONAL AIRWAY SYSTEM

NEW YORK—NEWPORT AIR SERVICE INAUGURATED

THE GARDNER, MOFFAT CO., INC.
HIGHLAND, N. Y.
225 FOURTH AVENUE, NEW YORK

Entered as Second-Class Matter, Nov. 22, 1920, at the Post Office at Highland, N. Y. under Act of March 3, 1879.

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Paterson, New Jersey, U. S. A.

WRIGHT

JULY 9, 1923

AVIATION

VOL. XV. NO. 2

Member of the Audit Bureau of Circulations

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"A Battle Ship Mast 10,000 Feet High"—

is the designation that has been given to the Navy M01 all-metal airplane, a product of the Glenn L. Martin organization.

The development of this plane, of which six have been built for experimental purposes, called for an unusual amount of research work because of the many really new features in its design and construction.

But the fact that it has passed the many and exhaustive Navy tests and that thirty-eight additional machines of this design have been ordered, speaks volumes for the utility and correctness of this new creation in aeronautics, as well as for the ability and progressiveness of the organization responsible for it.

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AVIATION

LADISLAS D'ORCY
EDITOR
VIRGINIUS E. CLARK
EDWARD P. WARNER
RALPH H. UPSON
CONTRIBUTING EDITORS

Vol. XV July 9, 1923 No. 2

The International Aircraft Code

WHEN the Commission of Jurists empowered to frame an aircraft code met at The Hague, it was expected that very little new or debatable would result from the deliberations. Codifying international law, particularly in respect to a subject as new as aviation proceeds slowly, and the important issues are usually settled after lengthy discussions between nations. The result of The Hague conference is along conservative lines, and as it must be subjected to the scrutiny of all nationals and made effective by treaty negotiations, it only covers points that are already accepted as fundamental in international usage of war.

The concluding article makes this clear by stating that "except so far as special rules are here laid down, and except also so far as the provisions of Chapter VII (Visit and Search, Capture and Condemnation) of these rules or international conventions indicate that maritime law and procedure are applicable, aircraft personnel engaged in hostilities come under the laws of war and neutrality applicable to land troops in virtue of the custom and practice of international law and the various declarations and conventions to which the States are concerned as parties."

The one subject covered by the proposed code that does not seem clear is that of bombing non-military population and places. The rules expressly state that "the bombardment of cities, towns, villages, dwellings not in the immediate neighborhood of the operation of land forces is prohibited." The rules then make an exception by granting that "in the immediate neighborhood of the operation of land forces, the bombardment of cities, villages, towns, dwellings or buildings is legitimate, providing that there exists reasonable presumption that the military concentration is sufficiently important to justify such bombardment, having regard to the danger thus caused to the civilian population."

Bombardment is also permissible against "military forces, military works, military establishments or depots, factories constituting important and well known centers engaged in the manufacture of arms, ammunition, or distinctively military supplies, lines of communication or transportation used for military purposes."

As will be noted, this part of the rules could be construed to cover almost any city that has arsenals, navy yards, manufacturing plants or railroad terminals.

The conception of air warfare as a thing apart from land and sea warfare seems to have been absent from the minds of the drafting committee. Aircraft are so closely attached to land and sea operations in the rules that the newer idea of air forces acting independently is left vague. From the viewpoint of those who give the next war serious consideration, the next phase of combatant activity will be air force against air force entirely independent of land or sea operations.

Our National Airways

OUR readers' particular attention is invited to the article appearing in this issue which describes the work accomplished to date by the Airways Section of the Army Air Service in an endeavor to give the United States a system of well planned and well organized airways.

The paramount importance of a national airway system for national defense as well as for commercial aviation has frequently been stressed in these columns. Just as a naval fleet would be valueless without naval bases equipped with dockyards, fuel stations and depots from which it can draw its sustenance and means of operation, so an air fleet becomes a negative entity if there does not exist a ground organization of airports and airways where it can find shelter, munitions and means of repair and refueling. Likewise, commercial airplanes cannot safely be operated on regular schedules between cities if the necessary ground organization of airports, emergency fields, route markers, weather forecast stations is lacking.

The building up of a national airway system is a huge undertaking, for it involves many thousands of miles of air routes. The establishment of permanent airports along these routes as well as the work of charting them for emergency fields, of marking them for ready identification, and of preparing aeronautical maps and flying directions which will give the information required by the airman, is an enterprise of such magnitude that nothing short of national cooperation can bring it into being. If we are to have a national airway system, we need the closest collaboration of the federal, state, county and municipal authorities, together with the helpful assistance of civic bodies, trade organizations, aeronautical associations, etc. For this purpose it is necessary to spread the idea that a national airway system is a national investment and a national insurance of the first class. All those interested in the future of American Aviation can help in this pioneer work, the materialization of which will be their greatest reward.

In the meantime, the Airways Section deserves the greatest praise for the farseeing manner in which it is handling this question despite its limited means of action.

The New York—Newport Air Line

THE inauguration of the New York—Newport air line is another important step forward in the development of American Commercial Aviation.

The great saving in time which the high speed Loening Air Yachts offer the traveler on this route should do much to popularize the service, while the social and financial prominence of its backers indicates that public air transport begins to command confidence. This is a happy augury for the future of Commercial Aviation in the United States.

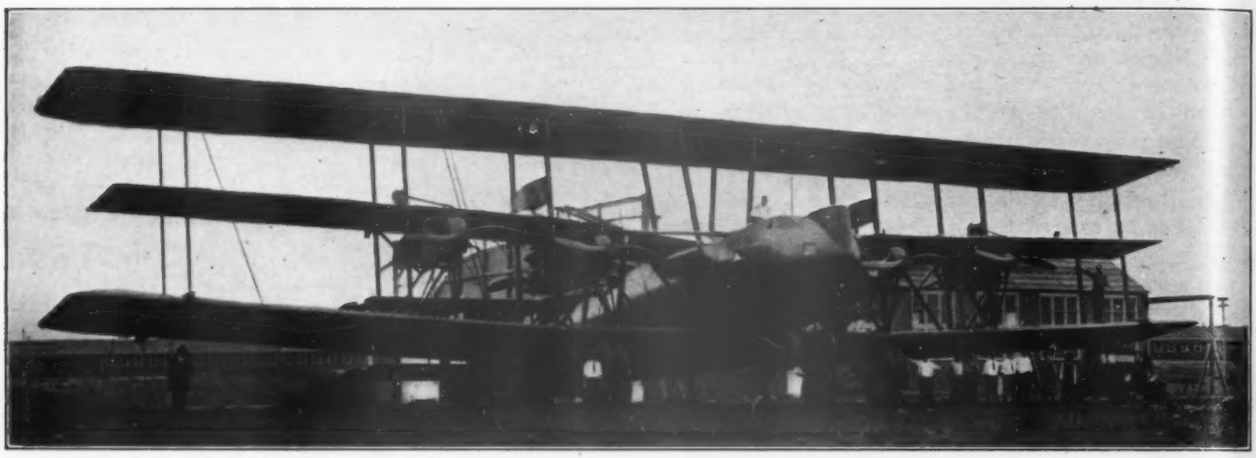
Barling Bomber is Ready for Trial Flights

World's Largest Airplane, Assembled at Wilbur Wright Field To be Tested July 15

The assembling of the Barling Bomber, the largest airplane in the world, is about completed, after several months' work at the Army Air Service Depot at Wilbur Wright Field, Dayton, Ohio. According to present plans, the trial flight will be made on July 15. First Lieuts. Leigh Wade and Harold R. Harris have been selected tentatively as the pilots. Both are now stationed at McCook Field.

In the cramped quarters of the hangar, it gives a startling impression of enormous size; but on the field, among other planes, presumably the contrast will be even more impressive. Even the latest design of Martin Bomber, with its 74-ft. wing span, will be comparatively small.

The Barling Bomber is a triplane or, more accurately speaking, a 2½ planer, since the mid plane is of narrow chord, and the ailerons are on the top and bottom planes only. The wing spread from tip to tip is 120 ft., height 28 ft., and overall length 65 ft. The gasoline capacity is 6 tons, or 2,000 gal. The oil capacity is 1,356 lb., or 181 gal. Six Liberty motors are required to power the airplane, and the minimum crew necessary to operate it will consist of four men. Specifications require that not more than 5,000 lb. of bombs shall be carried at one time, but were anything so large as a 10,000 lb. bomb developed, the Barling could lift and fly it for two hours. The weight of the airplane loaded will exceed 40,000 lb., and the specifications call for a flying speed of not less than 90 m.p.h.



Official Photo, U. S. Army Air Service

The Barling Bomber (six 400 hp. Liberty engines) ready for its trials

This Leviathan of the air was designed for the Army Air Service by Walter H. Barling, who is at present with the Engineering Division at Dayton supervising its assembly. It was constructed by the Wittemann Aircraft Corp. of Hasbrouck Heights, N. J.

Design

The materials used throughout the ship are of the "safety first" type. The basic material is spruce, which is more reliable than other aircraft material. Nearly all of the main fittings are of 60,000 lb. steel, rather than the nickel steel of 150,000 lb. used for the NC4. Duralumin is employed for pulley brackets and parts under relatively low stresses. Bakelite pulleys with ball bearings are used everywhere in the controls. The main landing gear axle steel was specified as 130,000 lb. elastic limit. Steel tubing was 55,000 and 110,000 lb.

As stated heretofore, the Barling Bomber is a 2½ planer, which arrangement of aerofoils possesses most of the advantages of the biplane and triplane, eliminating most of their disadvantages, and this for the following reasons:

First, it gives better engine support than a biplane. All engine controls are routed along the narrow chord wing.

Second, it makes the erection of the airplane, including fuselage, empennage, landing gears, gasoline system, five of the six engines, etc., possible in a standard Army hangar, leaving only the top and outer wings and the sixth engine to be assembled in the open. This would be impossible with the larger gap of the biplane. This advantage is being greatly appreciated in the present assembly at Wilbur Wright Field.

Third, it lessens the overall height of the usual triplane construction, making taxiing and landing safer.

Fourth, it provides a smaller span than that of a biplane, thereby reducing the necessary width of the hangar door, the most costly dimension in hangar construction.

Fifth, the fact that ailerons appear only on the top and bottom planes does away with the item of interference with the narrow chord and plane.

Constructional Features

The fuselage, which is built in sections, is of semi-monocoque type, that is, one strengthened by longerons, bulkheads and veneer, as opposed to the simple monocoque type, which is a shell of wood without other structural reinforcements. Six-inch shells could probably pass through the tail portion of this fuselage without bringing the plane down, the body being patched upon return to the base. There are no vital longerons or wires which if shot would end the flight. This is the military value of the monocoque type of fuselage.

With the full gasoline capacity of 2,000 gal., the ship is capable of flying for about 12 hr. at full speed. With the engines throttled, or some of them shut down completely, the time of flight and the distance covered can be correspondingly increased. Below the gasoline tank are the bomb crates which will carry the bombs. Trap doors in the bottom of the fuselage enable them to fall freely when released. On each side is a walkway to enable free access of all the crew to any part of the plane.

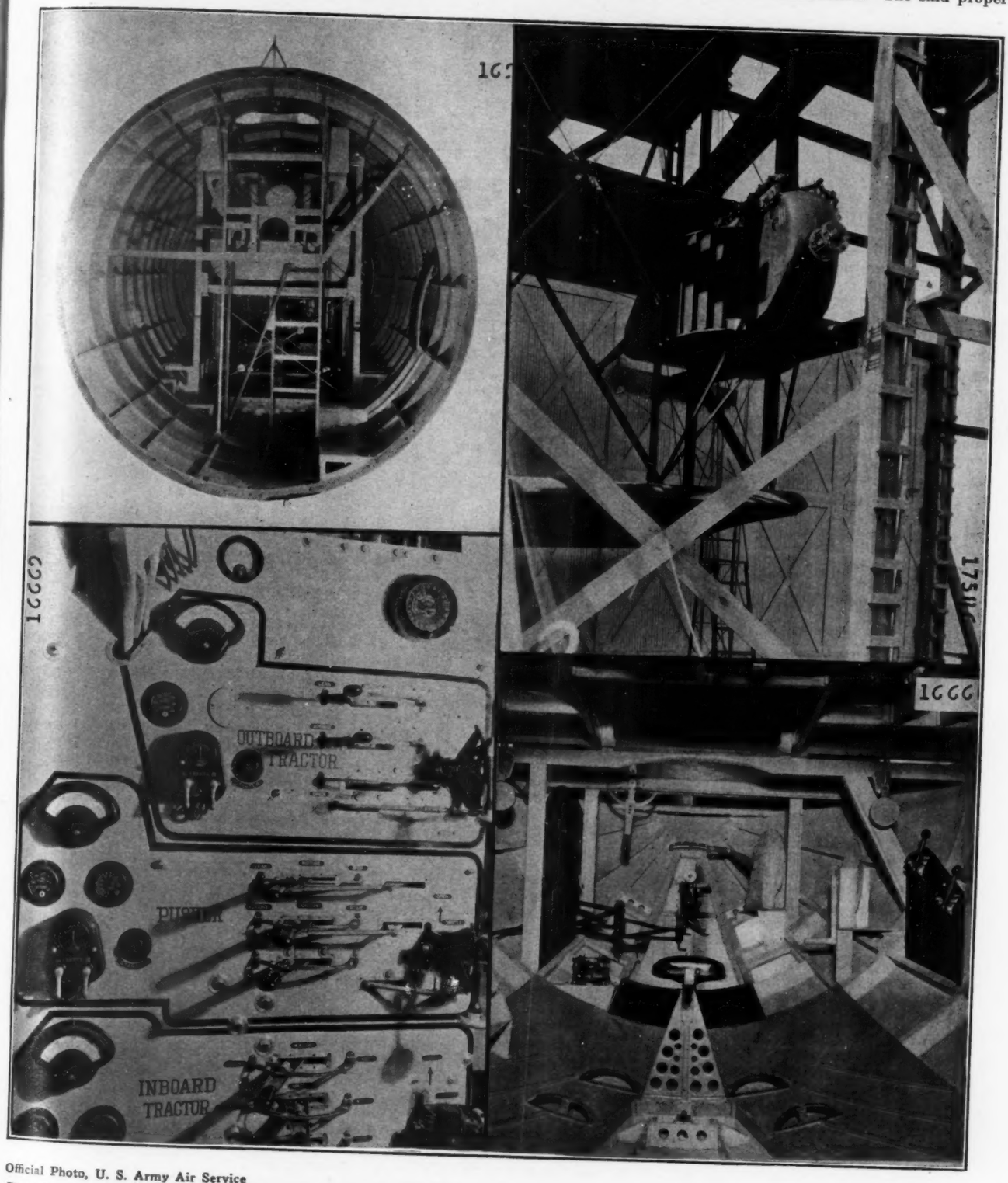
Seven guns are carried in the plane, operated from five cockpits, and cover practically the whole field in which enemy aircraft may approach, though the gun defense may be augmented if day fighting instead of night bombing should be contemplated.

The tail is a biplane structure having an adjustable in-

cidence. A special thin aerofoil section was used, as this cheapens the construction and produces as good damping as any other.

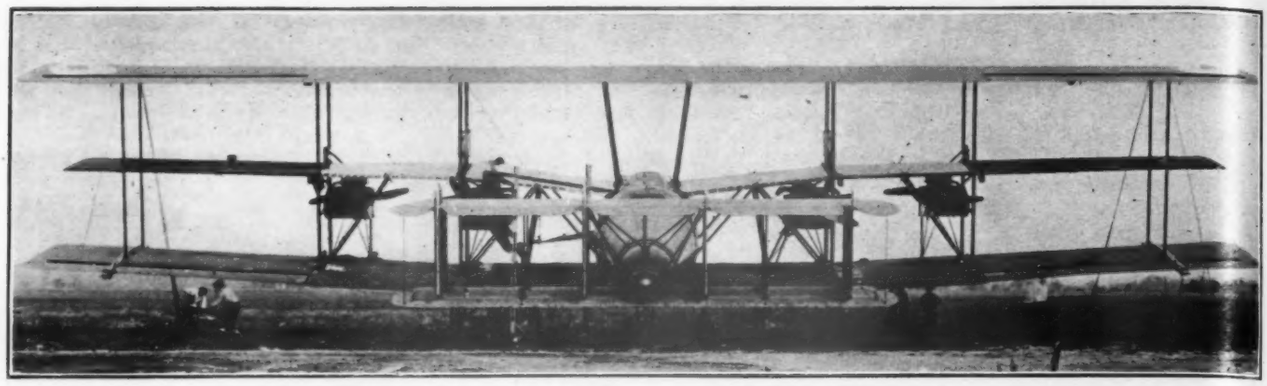
There are four equal size rudders and corresponding fins, the latter forming the interplane struts of the stabilizers. The whole biplane stabilizer is adjustable in incidence in flight from the pilot's cockpit. This feature was an important problem in the design, because of the areas involved, which are as follows: stabilizers and elevators 575 sq. ft.; fins and rudders 250 sq. ft. Thus, it may be seen that the stabilizers and elevators form a biplane of 8 ft. chord, and that in the structural problem weight had much more than its usual importance because of the distance of this empennage from the center of gravity of the airplane. With the exception of the ribs and fabric, the tail structure is of metal construction.

The tail skid is of all-metal construction. The skid proper



Official Photo, U. S. Army Air Service

Details of the Barling Bomber—Upper left hand picture shows internal construction of fuselage; upper right hand picture, an engine mounting; lower left hand the engineer's controls, and lower right hand picture the bomber's compartment



Official Photo, U. S. Army Air Service

Rear view of the Barling Bomber, showing outline of wings and tail

is an aluminum alloy boat having a steel keel and armored with steel straps, preferably manganese steel, underneath. The boat is a soil or earth boat, intended to ride over the ground and having a decided angle of incidence with the ground. This boat swivels on a support attached to a cross axle, which is prevented from motion by means of rubber shock absorber cords wound around the axle and the stationary tubular structure attached to the fuselage. As the amount of the rubber spring used is the same as that of a DH4 main undercarriage, the magnitude of the forces involved can be appreciated and it will be readily understood that a simple wooden skid would not have proved practicable.

The landing gear is unique. Of course the great weight of the airplane places it under unusual loads. The usual Vee type undercarriage would be scarcely sufficient for the proper protection of the airplane and the crew, and it has no safeguard against emergencies. A landing gear has two separate functions, namely, to absorb the energy of landing and to permit the taxiing of the airplane. The best positions of wheels for these two functions differ, as does also the best type of shock absorber. For landing, the wheels should be further forward than in the usual Vee type and the shock absorber should absorb the energy without rebound, that is, no springs are desirable. For taxiing, the wheels may be further back, relieving the tail skid of excessive load, and some spring device on the wheels is necessary.

Each "truck" has two wheels on the front axle and two on the rear axle, all wheels being of the Palmer Aero type with tire diameters of 60 in. by 12 in. Before landing the pilot pulls a control which lowers the front wheels causing them to touch first, the energy of landing being absorbed by long-stroke oil cylinders. The reactive force of the ground sets the airplane back on the rear wheels and tail skid, on which wheels the subsequent taxiing is done. These rear wheels are sprung by shock absorber rubber, the endless ring type being used.

The six 400 hp. Liberty engines are mounted in four nacelles, two on each side of the fuselage between the lower and the mid planes and far enough apart to enable an 18 ft. tractor propeller to be used should larger engines be installed in the future. In each of the nacelles nearest the fuselage two engines are placed in tandem, end to end, while in each of the two outer nacelles a single engine is placed driving tractor screws.

There are dual control sets for two pilots sitting side by side. The loads are large, and frequent change of pilots will be feasible during a long flight. A control stick in the pilot's cockpit regulates the operation of the engines. When pushed forward it opens the throttles of all the engines, a backward movement closing them. A lateral movement opens the throttles of the engines on one side of the airplane only. By a diagonal movement of the control stick the engines on one side are partially throttled, while those of the other side are kept open, this latter combination being extremely useful in accomplishing power turns.

On the pilot's instrument board are six engine revolution indicators, three on each side, an air speed indicator, a turn indicator which gyroscopically indicates any rotating motion about a vertical axis, a clock and an altitude indicator.

The engineer's controls are arranged in two banks, the controls for the three engines on the right side of the airplane being to the right of the engineer, those for the engines on the left side being to his left. Each engine has a throttle, mixture, ignition, and shutter control. The shutter control provides a micrometer adjustment and has emergency clutches, so that any engine may be used in case of damage, quite apart from other engines or the master control.

Fig. 2 gives a view of the bomber's cockpit. The bomber sits on the bicycle-like seat, and leans over the bomb sight, which is over the V-shaped window in the center of the picture. To the right may be seen the bomb release handles, his various instruments being placed to the left.

Inertia Coefficients of an Airship in a Frictionless Fluid

N.A.C.A. Report No. 164

Report No. 164 of the National Advisory Committee for Aeronautics by H. Bateman deals with the investigation of the apparent inertia of an airship hull. The exact solution of the aerodynamical problem has been studied for hulls of various shapes and special attention has been given to the case of an ellipsoidal hull. In order that the results for this last case may be readily adapted to other cases, they are expressed in terms of the area and perimeter of the largest cross section perpendicular to the direction of motion by means of a formula involving a coefficient K which varies only slowly when the shape of the hull is changed, being 0.637 for a circular or elliptic disk, 0.5 for a sphere, and about 0.25 for a spheroid of fineness ratio 7. For rough purposes it is sufficient to employ the coefficients, originally found for ellipsoids, for hulls otherwise shaped. When more exact values of the inertia are needed, estimates may be based on a study of the way in which K varies with different characteristics and for such a study the new coefficient possesses some advantages over one which is defined with reference to the volume of fluid displaced.

The case of rotation of an airship hull has been investigated also and a coefficient has been defined with the same advantages as the corresponding coefficient for rectilinear motion.

Aero Exhibition at Gotenburgh

C. E. Fritze Ltd., Stockholm, bookseller to the Swedish Court has been invited to organize a section of works on aeronautics in all languages at the International Aero Exhibition at Gotenburgh.

A catalog will be published listing the literature on flying published from 1910 to 1923. This catalog will also contain advertisements from firms making airplanes, motors, propellers, etc.

Organizing the National Airway System

What the Airways Section of the Army Air Service is Doing To Facilitate Flying Across Country

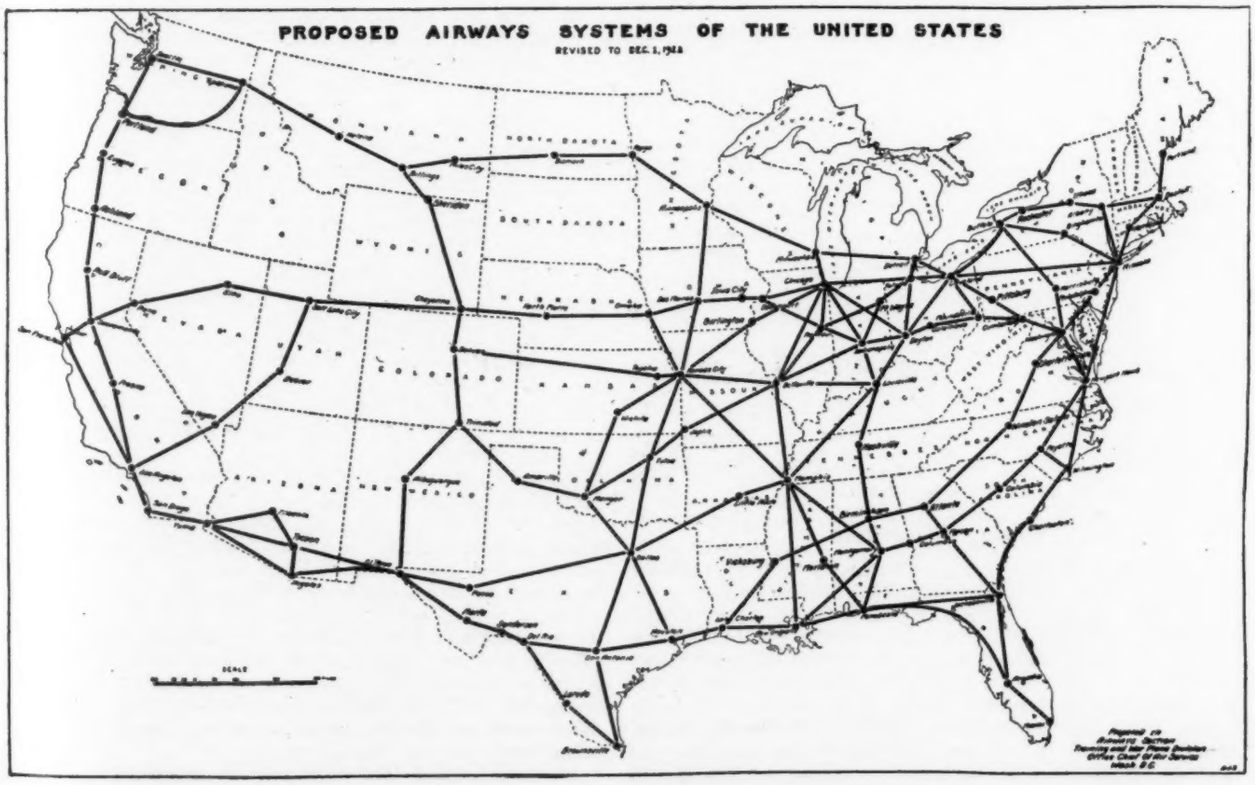
For some time past the Airways Section of the Army Air Service has been studying the continental United States with reference to the requirements of aircraft in traveling between various points, as a result of which a basic system of airways was outlined, paralleling in a great many instances the highways and rail routes. The proposed system includes some 30,000 miles of airways, comprising three transcontinental routes and five main routes from north to south. Main stations along the prescribed routes are planned for every 200 miles, where airports would be established with all facilities.

The importance of such national airway system, both from the viewpoint of national defense and of commercial air transport is obvious. If the United States were covered with a net of well equipped airways, it would be possible, as Brig. Gen. William Mitchell, Assistant Chief of Air Service, has pointed out on various occasions, to have the main fighting force of the Air Service stationed in the center of the country, whence it could be rushed on instant notice to whichever point of the border that may be threatened by hostile intent. Again, from the viewpoint of civil air transport, a national airway system is an absolute necessity, for neither regular air transport nor itinerant civil flying can safely be operated between the various centers of population until the necessary ground organization, with its airports, emergency fields, route markers and weather forecast stations is organized. The present situation is similar to that which confronted automobilists crossing the continent before our great national highways were laid out, sign posts erected and gasoline stations marked—it is still a matter of pioneering. Capt. Burdette S. Wright, Airways Officer of the Army Air Service, in calling attention to this fact in a recent talk over the radio from Arlington, Va., advocated the aid of civilian interests in laying out airways throughout the country.

Such a solution of this important problem is greatly to be desired, for the scant appropriations of the Army Air Service make it impossible for the latter to organize the national airways out of its own resources. Already the Airways Section of the Air Service has done an immense amount of valuable pioneer work in collecting information of permanent airports and emergency landing fields throughout the country, and, in particular, in establishing a model airway between Washington, D. C.; Dayton, Ohio; New York and Norfolk, Va. As its name indicates, this airway, with its airports and emergency fields, its directional and place markers, furnishes a model for the future national airways which must sooner or later come into being if cross-country flying is to become an everyday occurrence. While it is true that a great many automobile supplies are available to aviators in towns lying on national highways, in unsettled country aeronautical or equivalent supplies are difficult or impossible to get, so that the airman has to arrange for supplies in advance and anticipate overhauling where he can get mechanical assistance and parts.

The Aeronautical Bulletin

With a view to facilitate cross country flying, the Airways Section is now publishing the information of landing fields it has collected during the past three years in the "Aeronautical Bulletin". Several of these bulletins are issued monthly in loose leaf form, forty-one having so far appeared out of total of fifty-three which were prepared and are in press,



Outline map of the United States showing national airway system proposed by the Airways Section, U. S. Army Air Service (Belleville, Ill., is situated near St. Louis)

together with an index of the series. Each bulletin contains complete information on the location, approach and facilities of a given airport, together with two sketch maps, one giving the location of the field with respect to the surrounding territory, the other being an outline map of the field showing positions of hangars, obstructions, etc. These bulletins can be obtained at 5 cents each from the Superintendent of Documents, Government Printing Office, Washington, D. C. The following bulletins have appeared to date:

INDEX TO AERONAUTICAL BULLETINS (A.B.)

	ALABAMA	
Government Field,	Montgomery, Ala.	A.B. No. 35
	ARIZONA	
Municipal Field,	Tuscon, Ariz.	A.B. No. 29
Municipal Field,	Yuma, Ariz.	A.B. No. 22
	CALIFORNIA	
Rockwell Field,	San Diego, Calif.	A.B. No. 49
Crissy Field,	San Francisco, Calif.	A.B. No. 12
	COLORADO	
Humphries Field,	Denver, Colo.	A.B. No. 11
	CONNECTICUT	
Municipal Field,	Hartford, Conn.	A.B. No. 8
	ILLINOIS	
Scott Field,	Belleville, Ill.	A.B. No. 37
Air Mail Field,	Chicago, Ill.	A.B. No. 45
Chanute Field,	Rantoul, Ill.	A.B. No. 24
	INDIANA	
Kokomo Aviation Field,	Kokomo, Ind.	A.B. No. 26
	IOWA	
Commercial Field,	Davenport, Iowa	A.B. No. 5
Air Mail Field,	Iowa City, Iowa	A.B. No. 2
	KANSAS	
Government Field,	Fort Riley, Kan.	A.B. No. 6
	MARYLAND	
Aberdeen Prov. Grounds,	Aberdeen, Md.	A.B. No. 16
Logan Field,	Baltimore, Md.	A.B. No. 7
	MICHIGAN	
Selfridge Field,	Mt. Clemens, Mich.	A.B. No. 27
	MINNESOTA	
Speedway Field,	Minneapolis, Minn.	A.B. No. 42
	MISSOURI	
Richards Field,	Kansas City, Mo.	A.B. No. 41
Municipal Field,	St. Joseph, Mo.	A.B. No. 39
Municipal Field,	Springfield, Mo.	A.B. No. 36
	NEBRASKA	
Air Mail Field,	North Platte, Nebr.	A.B. No. 38
Ak-Sar-Ben Field,	Omaha, Nebr.	A.B. No. 17
	NEW JERSEY	
Aeromarine Facilities,	Keyport, N. J.	A.B. No. 46
Camp Vail,	Little Silver, N. J.	A.B. No. 4
Commercial Field,	Pine Valley, N. J.	A.B. No. 3
	NEVADA	
Air Mail Field,	Elko, Nev.	A.B. No. 31
Municipal Field,	Reno, Nev.	A.B. No. 25
	OHIO	
Air Mail Field,	Bryan, Ohio	A.B. No. 10
Glenn L. Martin Field,	Cleveland, Ohio	A.B. No. 19
Norton Field,	Columbus, Ohio	A.B. No. 32
Oakland Stock Farm	Near Columbus, Ohio	A.B. No. 33
McCook Field,	Dayton, Ohio	A.B. No. 9
	OKLAHOMA	
Commercial Field,	Tulsa, Okla.	A.B. No. 30
	PENNSYLVANIA	
Mayer Aircraft Corp.	Bridgeville, Penn.	A.B. No. 44
Municipal Field,	Media, Penn.	A.B. No. 40
	TENNESSEE	
Black Wood Field,	Nashville, Tenn.	A.B. No. 14
	TEXAS	
Army A.S. Field,	El Paso, Tex.	A.B. No. 43
Kelly Field,	San Antonio, Tex.	A.B. No. 23
Ellington Field,	San Antonio, Tex.	A.B. No. 47
Border Patrol Station,	Sanderson, Tex.	A.B. No. 34
	UTAH	
Woodward Field,	Salt Lake City, Utah	A.B. No. 18
	VIRGINIA	
Private Field,	Cobham, Va.	A.B. No. 15
Langley Field,	Hampton, Va.	A.B. No. 28
Brown Field,	Quantico, Va.	A.B. No. 13
	WEST VIRGINIA	
Langin Field,	Moundsville, W. Va.	A.B. No. 1
	WYOMING	
Air Mail,	Cheyenne, Wyo.	A.B. No. 21
Air Mail Field,	Rock Springs, Wyo.	A.B No. 48
Municipal (Air Mail)	Sheridan, Wyo.	A.B. No. 20

Aeronautical Bulletin No. 50 will be an index

Flying Directions

The Airways Section is about to supplement this airport information with what, by analogy with the Sailing Directions for merchant ships, may best be called "Flying Directions." For those unfamiliar with the sea it may be added that these Flying Directions will contain all the information necessary to find one's way from one airport to another, and answer the same purpose the Blue Book does for the automobile tourist. This information will be published as a "Route Information Series" in the Aeronautical Bulletin, one loose-leaf sheet to be published on each section of the airways system averaging between 100 and 200 miles in length, the first page covering information in one direction and the second page covering it in the return direction. A sample description of a section of the proposed airway system, covering the route from Washington to Cumberland, is given below:

ROUTE INFORMATION SERIES

Washington, D. C.—Cumberland, Md. (see Airway Series Map No. 2)

Washington to Cumberland Compass Course 306°43½′ Magnetic Declination 6° West

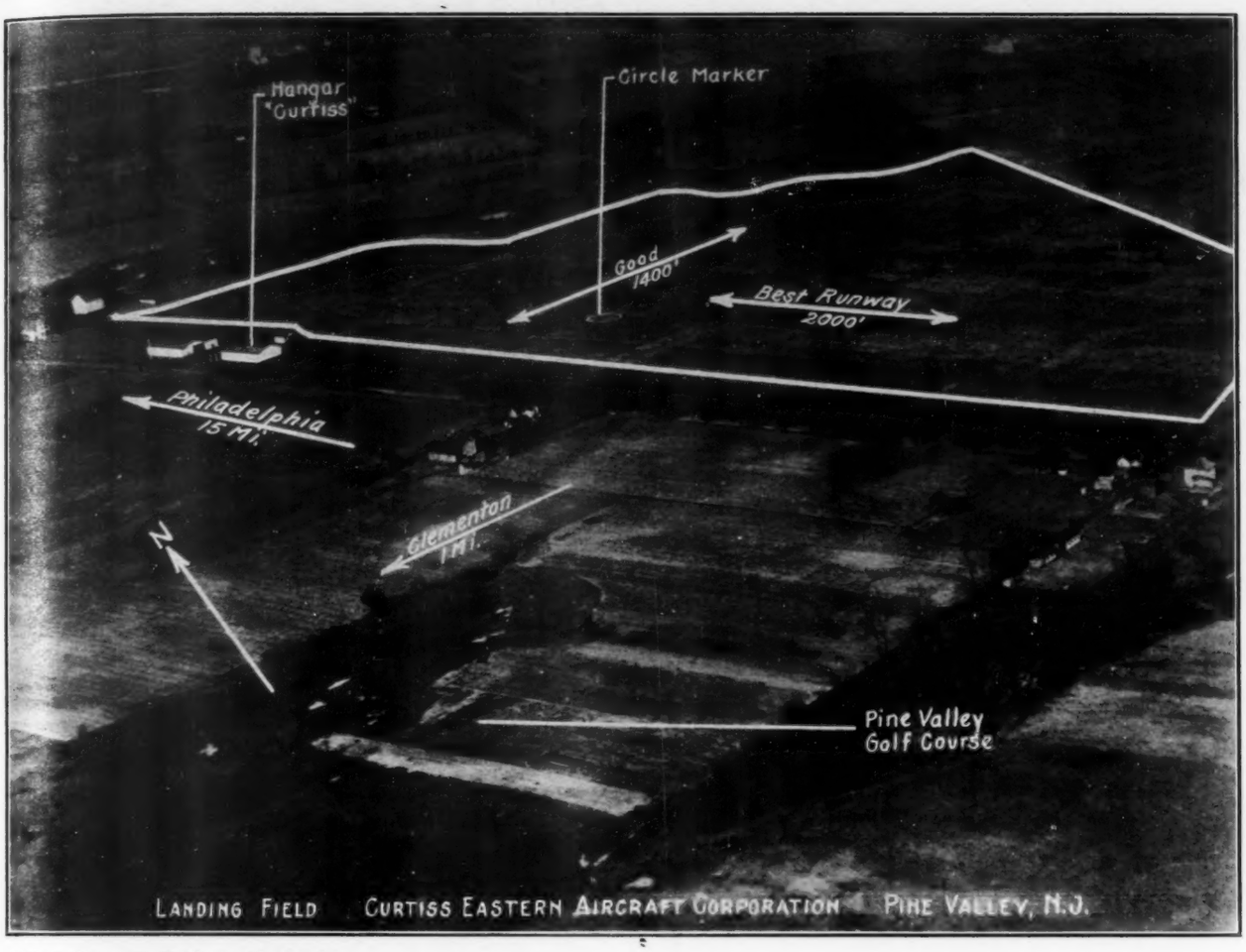
Mileage

0 Leave Bolling Field just south of Washington at Anacostia bearing to the right of the Arlington Wireless
3 Towers as you cross the river holding the course and passing to the left of the big bend in the Potomac River
16 at Great Falls, distinguished by the falls and numerous rocks in River. Pick up the main pike running paralled to your line of flight and follow it to Leesburg, keeping the Potomac River to the right of you. Leesburg is
36 on the interurban line which swings in across the highway from the left and can be distinguished by large marker on roof of building, the cement plant on interurban line in east of town, the large red water tank and the race track to the west. Landing Field to south of town not marked.
41 Hold course following interurban line for 4 miles west from Leesburg where it swings off to the left after passing thru cut in low ridge. Continue on over next
48 ridge and note Shenandoah River and valley just be-
50 yond, where you can check your course by the map and
55 the numerous curves in the river. Note Charlestown, W. Va., just ahead and to the right of your course, which is marked and has an emergency field just to the northwest of the racetrack inside of the fairgrounds fence. Continue on across the valley noting, if there is good visibility, the town of Martinsburg some ten miles to the right of the course, where there is an emer-
65 gency field. Several large old rock quarries filled with water should be just to the left of your course as you cross the R.R. running between Martinsburg on the right and Winchester on the left. Numerous landing fields can be found in the valley but care must be exercised reference the rocks scattered in them.
68 You now approach the second ridge (altitude about 1700 ft.) and are reaching the first series of ridges of the mountainous country. Hold your course and ap-
75 proach a higher ridge (2300 ft.) with a slight depression on the course where two parallel ridges from the right join in a saddle then split as they continue to the left. *Landing field* at Capon Bridge to the left. Cross a series of parallel ridges which are perpendicular to your line of flight checking your course when you reach
86 the very crooked river at 86 miles out and continue over the next ridge striking the Potomac River at Paw
91 Paw, W. Va., where the R.R. and the Canal go through a tunnel to the right of the course. *Landing field* reported here. Hold course after crossing the river at
98 Paw Paw with the river to your left and note the valley near Greenspring, Pa., where it is possible to land down near the river. Note the smoke of Cumberland
108 up ahead and the large R.R. yards. *Landing field* in the 270° bend in the river just before you reach Cumberland.

(Description reported by 1st Lt. Joshua Jones, A.S., U.S.A., May 15, 1923)

A copy of this sample description will be furnished each officer ordered to make the investigation of the section allotted to the various Air Service stations. In following these routes, it is recommended that two officers fly in the plane, both being pilots, as a pilot is more capable of writing descriptions such as are required than would be someone not familiar with piloting and cross-country flying and the requirements incident thereto in the way of information on the route. They will be instructed, in these flights, to attempt to select and report information on landing facilities at intervals of twenty-five miles along each section.

The information thus obtained will eventually be used in the preparation of the Airways Series of the Aerial Navigation Maps, but in the meantime it will be issued as fast as it is available in the Aeronautical Bulletin.



Official Photo U. S. Army Air Service

How the Airways Section of the Army Air Service interprets for airmen photographs of airports: Curtiss Field at Pine Valley, N. J., a stop on the Model Airway, halfway between New York and Washington, D. C.

The Airways Section is also working out a complete system of ground markers which are to be placed along the airways and in the neighborhood of cities and towns through the cooperation of municipalities, civic bodies, etc. These markers will constitute reference points for the Flying Directions and for the Aerial Navigation Maps. As there is as yet very little night flying, day markers have been given first consideration.

International markers prescribed by the Paris convention in 1919 are used when possible, and instructions and diagrams are available for distribution to interested communities which desire to aid transient pilots. Sites for the erection of these markers with the name of the town are desirable on the railroad rights-of-way and in some instances have been arranged for. These identifications are sometimes too large for practical use, it has been found, so signs are frequently limited to the name of the town or station laid out on the right-hand side of the railway approach to a town or city. Authority from the railroad is of course secured. The usual signs on railroad stations are seldom visible from above, but the name of the town on the roof of the station or a neighboring factory or shed is visible aloft if clearly lettered. Fifty of these sign posts have been laid down by the Airways Section between Dayton and Washington, with money appropriated for the purpose. Instructions in detail and diagram may be secured from the Air Service in Washington. Some high water and gas tanks have also been used for markers.

The Air Service also suggest the use of large, plainly lettered sign boards, similar to auto signs along highways, indicating the name of the town being approached, together with an arrow and the distance in miles. Local interests have cooperated in this work without expense to the Government, and it is believed that this is a very good means of community advertising. Sign painting companies have also been appealed to for aid in indicating routes for fliers as well as autoists. Other community and commercial interests have also promised assistance in aiding the Air Service to establish its aerial highways.

Besides the terminal and town markers, the flier enroute needs other guides of a directional nature, Captain Wright explained. What are known as course check markers are necessary for the checking of compass, routes and drift. These markers should be laid down along the routes between organized fields, or at least approaching and leading from them, to assure the pilot a proper guide on his course. In unsettled country especially, where large buildings are not available and stations none too frequent, these guides are required. Large arrows are used in some instances with the name of the town lying in that direction and the miles it is distant in letters a foot high.

Over its model airway between Washington, Dayton, New York and Norfolk, operated continuously since May, 1922, over 100,000 miles of flying has been done, without injury and a minimum of crashes. Many times, due to bad weather conditions or motor trouble, pilots have been forced to land but they have usually been able to continue their flight. This gives a fair idea of the safety of air travel over an organized route, and yet the Army Air Service says its Model Airway is in no way completely organized.

An invitation to people living along the routes of the Model Airway was extended by Captain Wright to visit the nearest operating field and see how the system, with its weather reports, bulletin boards, radio communication facilities, supplies, map references and other features aids the flier along this first organized air route.

A Proposed International Aircraft Code

Commission of Jurists Drafts Rules Making Aircraft Conform To Established Usage of Warfare

Under a resolution adopted at the Washington Conference on the Limitation of Armament on Feb. 4, 1922, a Commission of Jurists was appointed by the United States, the British Empire, France, Italy and Japan to draft a code for the control of radio and aircraft in warfare. This Commission which was composed of two members each of the above mentioned powers, held thirty sessions at The Hague, Netherlands, between Dec. 11, 1922, and Feb. 19, 1923, and prepared a report which has just been made public by the State Department. This report is to be submitted to the five naval limitation powers in the form of a treaty for ratification.

Part II of the report, which deals with the control of aircraft in warfare, is reproduced below. The importance of an international agreement governing usage of aerial warfare are obvious in view of the almost unlimited offensive possibilities of aircraft. The Aircraft Code elaborated by the Commission of Jurists lays down for aerial bombardment much the same rules as the Hague conventions of 1907 laid down for military and naval bombardments. A military purpose must be clearly served in order to justify aerial bombardment. The places attacked must be in the neighborhood of operating land forces. Churches, historic monuments, hospitals and art museums are to be spared. Altogether, the Aircraft Code strives to make aerial warfare conform to established war usage.—EDITOR.

CHAPTER I. APPLICABILITY: CLASSIFICATION AND MARKS

Article 1. The rules of aerial warfare apply to all aircraft, whether lighter or heavier than air, irrespective of whether they are, or are not, capable of floating on the water.

Article 2. The following shall be deemed to be public aircraft: (a) military aircraft; (b) non-military aircraft exclusively employed in the public service. All other aircraft shall be deemed to be private aircraft.

Article 3. A military aircraft shall bear an external mark indicating its nationality and military character.

Article 4. A public non-military aircraft employed for customs or police purposes shall carry papers evidencing the fact that it is exclusively employed in the public service. Such an aircraft shall bear an external mark indicating its nationality and its public non-military character.

Article 5. Public non-military aircraft other than those employed for customs or police purposes shall in time of war bear the same external marks, and for the purposes of these rules shall be treated on the same footing, as private aircraft.

Article 6. Aircraft not comprised in articles 3 and 4 and deemed to be private aircraft shall carry such papers and bear such external marks as are required by the rules in force in their own country. These marks must indicate their nationality and character.

Article 7. The external marks required by the above articles shall be so affixed that they cannot be altered in flight. They shall be as large as is practicable and shall be visible from above, from below and from each side.

Article 8. The external marks, prescribed by the rules in force in each State shall be notified promptly to all other Powers.

Modifications adopted in time of peace of the rules prescribing external marks shall be notified to all other Powers before they are brought into force.

Modifications of such rules adopted at the outbreak of war or during hostilities shall be notified by each Power as soon as possible to all other Powers and at latest when they are communicated to its own fighting forces.

Article 9. A belligerent non-military aircraft, whether public or private, may be converted into a military aircraft, provided that the conversion is effected within the jurisdiction of the belligerent State to which the aircraft belongs and not on the high seas.

Article 10. No aircraft may possess more than one nationality.

CHAPTER II. GENERAL PRINCIPLES

Article 11. Outside the jurisdiction of any State, belligerent or neutral, all aircraft shall have full freedom of passage through the air and of alighting.

Article 12. In time of war any State, whether belligerent or neutral, may forbid or regulate the entrance, movement or sojourn of aircraft within its jurisdiction.

CHAPTER III. BELLIGERENTS

Article 13. Military aircraft are alone entitled to exercise belligerent rights.

Article 14. A military aircraft shall be under the command of a person duly commissioned or enlisted in the military service of the State; the crew must be exclusively military.

Article 15. Members of the crew of a military aircraft shall wear a fixed distinctive emblem of such character as to be recognizable at a distance in case they become separated from their aircraft.

Article 16. No aircraft other than a belligerent military aircraft shall engage in hostilities in any form.

The term "hostilities" includes the transmission during flight of military intelligence for the immediate use of a belligerent.

No private aircraft, when outside the jurisdiction of its own country, shall be armed in time of war.

Article 17. The principles laid down in the Geneva Convention, 1906, and the Convention for the adaptation of the said Convention to Maritime War (No. X of 1907) shall apply to aerial warfare and to flying ambulances, as well as to the control over flying ambulances exercised by a belligerent commanding officer.

In order to enjoy the protection and and privileges allowed to mobile medical units by the Geneva Convention, 1906, flying ambulances must bear the distinctive emblem of the Red Cross in addition to the usual distinguishing marks.

CHAPTER IV. HOSTILITIES

Article 18. The use of tracer, incendiary or explosive projectiles by or against aircraft is not prohibited.

This provision applies equally to States which are parties to the Declaration of St. Petersburg, 1868, and to those which are not.

Article 19. The use of false external marks is forbidden.

Article 20. When an aircraft has been disabled, the occupants when endeavoring to escape by means of a parachute must not be attacked in the course of their descent.

Article 21. The use of aircraft for the purpose of disseminating propaganda shall not be treated as an illegitimate means of warfare.

Members of the crews of such aircraft must not be deprived of their rights as prisoners of war on the charge that they have committed such an act.

Article 22. Aerial bombardment for the purpose of terrorizing the civilian population, of destroying or damaging private property not of military character, or of injuring non-combatants is prohibited.

Article 23. Aerial bombardment for the purpose of enforcing compliance with requisitions in kind or payment of contributions in money is prohibited.

Article 24. (1) Aerial bombardment is legitimate only when

directed at a military objective, that is to say, an object of which the destruction or injury would constitute a distinct military advantage to the belligerent.

(2) Such bombardment is legitimate only when directed exclusively at the following objectives: military forces; military works; military establishments or depots; factories constituting important and well-known centers engaged in the manufacture of arms, ammunition or distinctively military supplies; lines of communication or transportation used for military purposes.

(3) The bombardment of cities, towns, villages, dwellings or buildings not in the immediate neighborhood of the operations of land forces is prohibited. In cases where the objectives specified in paragraph 2 are so situated, that they cannot be bombarded without the indiscriminate bombardment of the civilian population, the aircraft must abstain from bombardment.

(4) In the immediate neighborhood of the operations of land forces, the bombardment of cities, towns, villages, dwellings or buildings is legitimate provided that there exists a reasonable presumption that the military concentration is sufficiently important to justify such bombardment, having regard to the danger thus caused to the civilian population.

(5) A belligerent State is liable to pay compensation for injuries to person or to property caused by the violation by any of its officers or forces of the provisions of this article.

Article 25. In bombardment by aircraft, all necessary steps must be taken by the commander to spare as far as possible buildings dedicated to public worship, art, science, or charitable purposes, historic monuments, hospital ships, hospitals and other places where the sick and wounded are collected, provided such buildings, objects or places are not at the time used for military purposes. Such buildings, objects and places must by day be indicated by marks visible to aircraft. The use of marks to indicate other buildngs, objects, or places than those specified above is to be deemed an act of perfidy. The marks used as aforesaid shall be in the case of buildings protected under the Geneva Convention the red cross on a white ground, and in the case of other protected buildings a large rectangular panel divided diagonally into two pointed triangular portions, one black and the other white.

A belligerent who desires to secure by night the protection for the hospitals and other privileged buildings above mentioned must take the necessary measures to render the special signs referred to sufficiently visible.

Article 26. The following special rules are adopted for the purpose of enabling States to obtain more efficient protection for important historic monuments situated within their territory, provided that they are willing to refrain from the use of such monuments and a surrounding zone for military purposes, and to accept a special regime for their inspection.

(1.) A State shall be entitled, if it sees fit, to establish a zone of protection round such monuments situated in its territory. Such zones shall in time of war enjoy immunity from bombardment.

(2.) The monuments round which a zone is to be established shall be notified to other Powers in peace time through the diplomatic channel; the notification shall also indicate the limits of the zones. The notification may not be withdrawn in time of war.

(3) The zone of protection may include, in addition to the area actually occupied by the monument or group of monuments, an outer zone, not exceeding 500 meters in width, measured from the circumference of the said area.

(4.) Marks clearly visible from aircraft either by day or by night will be employed for the purpose of ensuring the identification by belligerent airmen of the limits of the zones.

(5.) The marks on the monuments themselves will be those defined in article 25. The marks employed for indicating the surrounding zones will be fixed by each State adopting the provisions of this article, and will be notified to other Powers at the same time as the monuments and zones are notified.

(6.) Any abusive use of the marks indicating the zones referred to in paragraph 5 will be regarded as an act of perfidy.

(7.) A State adopting the provisions of this article must abstain from using the monument and the surrounding zone for military purposes, or for the benefit in any way whatever of its military organization, or from committing within such monument or zone any act with a military purpose in view.

(8.) An inspection committee consisting of three neutral representatives accredited to the State adopting the provisions of this article, or their delegates, shall be appointed for the purpose of ensuring that no violation is committed of the provisions of paragraph 7. One of the members of the committee of inspection shall be the representative (or his delegate) of the State to which has been entrusted the interests of the opposing belligerent.

Article 27. Any person on board a belligerent or neutral aircraft is to be deemed a spy only if acting clandestinely or on false pretences he obtains or seeks to obtain, while in the air, information within belligerent jurisdiction or in the zone of operations of a belligerent with the intention of communicating it to the hostile party.

Article 28. Acts of espionage committed after leaving the aircraft by members of the crew of an aircraft or by passengers transported by it are subject to the provisions of the Land Warfare Regulations.

Article 29. Punishment of the acts of espionage referred to in articles 27 and 28 is subject to articles 30 and 31 of the Land Warfare Regulations.

CHAPTER V. MILITARY AUTHORITY OVER ENEMY AND NEUTRAL AIRCRAFT AND PERSONS ON BOARD

Article 30. In case a belligerent commanding officer considers that the presence of aircraft is likely to prejudice the success of the operations in which he is engaged at the moment, he may prohibit the passing of neutral aircraft in the immediate vicinity of his forces or may oblige them to follow a particular route. A neutral aircraft which does not conform to such directions, of which it has had notice issued by the belligerent commanding officer, may be fired upon.

Article 31. In accordance with the principles of article 53 of the Land Warfare Regulations, neutral private aircraft found upon entry in the enemy's jurisdiction by a belligerent occupying force may be requisitioned, subject to the payment of full compensation.

Article 32. Enemy public aircraft, other than those treated on the same footing as private aircraft, shall be subject to confiscation without prize proceedings.

Article 33. Belligerent non-military aircraft, whether public or private, flying within the jurisdiction of their own State, are liable to be fired upon unless they make the nearest available landing on the approach of enemy military aircraft.

Article 34. Belligerent non-military aircraft, whether public or private, are liable to be fired upon, if they fly (1) within the jurisdiction of the enemy, or (2) in the immediate vicinity thereof and outside the jurisdiction of their own State, or (3) in the immediate vicinity of the military operations of the enemy by land or sea.

Article 35. Neutral aircraft flying within the jurisdiction of a belligerent, and warned of the approach of military aircraft of the opposing belligerent, must make the nearest available landing. Failure to do so exposes them to the risk of being fired upon.

Article 36. When an enemy military aircraft falls into the hands of a belligerent, the members of the crew and the passengers, if any, may be made prisoners of war.

The same rule applies to the members of the crew and the passengers, if any, of an enemy public non-military aircraft, except that in the case of public non-military aircraft devoted exclusively to the transport of passengers, the passengers will be entitled to be released unless they are in the service of the enemy, or are enemy nationals fit for military service.

If any enemy private aircraft falls into the hands of a belligerent, members of the crew who are enemy nationals or who are neutral nationals in the service of the enemy, may be made prisoners of war. Neutral members of the crew, who are not in the service of the enemy, are entitled to be released if they sign a written undertaking not to serve in any enemy aircraft while hostilities last. Passengers are entitled to be released unless they are in the service of the enemy or are enemy nationals fit for military service, in which cases they may be made prisoners of war.

Release may in any case be delayed if the military interests of the belligerent so require.

The belligerent may hold as prisoners of war any member

of the crew or any passenger whose service in a flight at the close of which he has been captured has been of special and active assistance to the enemy.

The names of individuals released after giving a written undertaking in accordance with the third paragraph of this article will be notified to the opposing belligerent, who must not knowingly employ them in violation of their undertaking.

Article 37. Members of the crew of a neutral aircraft which has been detained by a belligerent shall be released unconditionally, if they are neutral nationals and not in the service of the enemy. If they are enemy nationals or in the service of the enemy, they may be made prisoners of war.

Passengers are entitled to be released unless they are in the service of the enemy or are enemy nationals fit for military service, in which cases they may be made prisoners of war.

Release may in any case be delayed if the military interests of the belligerent so require.

The belligerent may hold as prisoners of war any member of the crew or any passenger whose service in a flight at the close of which he has been captured has been of special and active assistance to the enemy.

Article 38. Where under the provisions of article 36 and 37 it is provided that members of the crew or passengers may be made prisoners of war, it is to be understood that, if they are not members of the armed forces, they shall be entitled to treatment not less favorable than that accorded to prisoners of war.

CHAPTER VI. BELLIGERENT DUTIES TOWARD NEUTRAL STATES AND NEUTRAL DUTIES TOWARD BELLIGERENT STATES

Article 39. Belligerent aircraft are bound to respect the rights of neutral Powers and to abstain within the jurisdiction of a neutral State from the commission of any act which it is the duty of that State to prevent.

Article 40. Belligerent military aircraft are forbidden to enter the jurisdiction of a neutral State.

Article 41. Aircraft on board vessels of war, including aircraft-carriers, shall be regarded as part of such vessel.

Article 42. A neutral government must use the means at its disposal to prevent the entry within its jurisdiction of belligerent military aircraft and to compel them to alight if they have entered such jurisdiction.

A neutral government shall use the means at its disposal to intern any belligerent military aircraft which is within its jurisdiction after having alighted for any reason whatsoever, together with its crew and the passengers, if any.

Article 43. The personnel of a disabled belligerent military aircraft rescued outside neutral waters and brought into the jurisdiction of a neutral State by a neutral military aircraft and there landed shall be interned.

Article 44. The supply in any manner, directly or indirectly, by a neutral government to a belligerent Power of aircraft, parts of aircraft, or material, supplies or munitions required for aircraft is forbidden.

Article 45. Subject to the provisions of article 46, a neutral Power is not bound to prevent the export or transit on behalf of a belligerent of aircraft, parts of aircraft, or material, supplies or munitions for aircraft.

Article 46. A neutral government is bound to use the means at its disposal:

(1) to prevent the departure from its jurisdiction of an aircraft in a condition to make a hostile attack against a belligerent Power, or carrying or accompanied by appliances or materials the mounting or utilization of which would enable it to make a hostile attack, if there is reason to believe that such aircraft is destined for use against a belligerent Power;

(2) to prevent the departure of an aircraft the crew of which includes any member of the combatant forces of a belligerent Power;

(3) to prevent work upon an aircraft designed to prepare it to depart in contravention of the purposes of this article.

On the departure by air of any aircraft despatched by persons or companies in neutral jurisdiction to the order of a belligerent Power, the neutral government must prescribe for such aircraft a route avoiding the neighborhood of the military operations of the opposing belligerent, and must exact whatever guarantees may be required to ensure that the aircraft follows the route prescribed.

Article 47. A neutral State is bound to take such steps as the means at its disposal permit to prevent within its jurisdiction aerial observation of the movements, operations or defences of one belligerent, with the intention of informing the other belligerent.

This provision applies equally to a belligerent military aircraft on board a vessel of War.

Article 48. The action of a neutral Power in using force or other means at its disposal in the exercise of its rights or duties under these rules cannot be regarded as a hostile act.

CHAPTER VII. VISIT AND SEARCH, CAPTURE AND CONDEMNATION

Article 49. Private aircraft are liable to visit and search and to capture by belligerent military aircraft.

Article 50. Belligerent military aircraft have the right to order public non-military and private aircraft to alight in or proceed for visit and search to a suitable locality reasonably accessible.

Refusal, after warning, to obey such orders to alight or to proceed to such a locality for examination exposes an aircraft to the risk of being fired upon.

Article 51. Neutral public non-military aircraft, other than those which are to be treated as private aircraft, are subject only to visit for the purpose of the verification of their papers.

Article 52. Enemy private aircraft are liable to capture in all circumstances.

Article 53. A neutral private aircraft is liable to capture if it:

(a.) resists the legitimate exercise of belligerent rights;
(b.) violates a prohibition of which it has had notice issued by a belligerent commanding officer under article 30;
(c.) is engaged in unneutral service;
(d.) is armed in time of war when outside the jurisdiction of its own country;
(e.) has no external marks or uses false marks;
(f.) has no papers or insufficient or irregular papers;
(g.) is manifestly out of the line between the point of departure and the point of destination indicated in its papers and after such enquiries as the belligerent may deem necessary, no good cause is shown for the deviation. The aircraft, together with its crew and passengers, if any, may be detained by the belligerent pending such enquiries;
(h.) carries, or itself constitutes, contraband of war;
(i.) is engaged in breach of a blockade duly established and effectively maintained;
(k.) has been transferred from belligerent to neutral nationality at a date and in circumstances indicating an intention of evading the consequences to which an enemy aircraft, as such, is exposed.

Provided that in each case, (except (k)), the ground for capture shall be an act carried out in the flight in which the neutral aircraft came into belligerent hands, i.e. since it left its point of departure and before it reached its point of destination.

Article 54. The papers of a private aircraft will be regarded as insufficient or irregular if they do not establish the nationality of the aircraft and indicate the names and nationalities of the crew and passengers, the points of departure and destination of the flight, together with particulars of the cargo and the conditions under which it is transported. The logs must also be included.

Article 55. Capture of an aircraft or of goods on board an aircraft shall be made the subject of prize proceedings, in order that any neutral claim may be duly heard and determined.

Article 56. A private aircraft captured upon the ground that it has no external marks or is using false marks, or that it is armed in time of war outside the jurisdiction of its own country, is liable to condemnation.

A neutral private aircraft captured upon the ground that it has disregarded the direction of a belligerent commanding officer under article 30 is liable to condemnation unless it can justify its presence within the prohibited zone.

In all other cases, the prize court in adjudicating upon any case of capture of an aircraft or its cargo, or of postal correspondence on board an aircraft, shall apply the same rules

as would be applied to a merchant vessel or its cargo or to postal correspondence on board a merchant vessel.

Article 57. Private aircraft which are found upon visit and search to be enemy aircraft may be destroyed if the belligerent commanding officer finds it necessary to do so, provided that all all persons on board must be placed in safety, and all papers papers of the aircraft have been preserved.

Article 58. Private aircraft which are found upon visit and search to be neutral aircraft liable to condemnation upon the ground of unneutral service, or upon the ground that they have no external marks or are bearing false marks, may be destroyed, if sending them in for adjudication would be impossible or would imperil the safety of the belligerent aircraft or the success of the operations in which it is engaged. Apart from the cases mentioned above, a neutral private aircraft must not be destroyed except in the gravest military emergency, which would not justify the officer in command in releasing it or sending it in for adjudication.

Article 59. Before a neutral private aircraft is destroyed, of the aircraft must be preserved.

A captor who has destroyed a neutral private aircraft must bring the capture before the prize court, and must first establish that he was justified in destroying it under article 58. If he fails to do this, parties interested in the aircraft or its cargo are entitled to compensation. If the capture is held to be invalid, though the act of destruction is held to have been justifiable, compensation must be paid to the parties interested in place of the restitution to which they would have been entitled.

Article 60. Where a neutral private aircraft is captured on the ground that it is carrying contraband, the captor may demand the surrender of any absolute contraband on board, or may proceed to the destruction of such absolute contraband, if sending in the aircraft for adjudication is impossible or would imperil the safety of the belligerent aircraft or the success of the operations in which it is engaged. After entering in the log book of the aircraft the delivery or destruction of the goods, and securing, in original or copy, the relevant papers of the aircraft, the captor must allow the neutral aircraft to continue its flight.

The provisions of the second paragraph of Article 59 will apply where absolute contraband on board a neutral private aircraft is handed over or destroyed.

CHAPTER VIII. DEFINITIONS

Article 61. The term "military" throughout these rules is to be read as referring to all branches of the forces, i.e. the land forces, the naval forces and the air forces.

Article 62. Except so far as special rules are here laid down and except also so far as the provisions of Chapter VII of these Rules or international conventions indicate that maritime law and procedure are applicable, aircraft personnel engaged in hostilities come under the laws of war and neutrality applicable to land troops in virtue of the custom and practice of international law and of the various declarations and conventions to which the States concerned are parties.

Air Transport in Colombia

A Letter from the SCADTA

Editor, AVIATION:—

We have read with great interest Ladislas d'Orey's article published in AVIATION No. 15 of April 9, 1923, entitled: "German Air Activities and Latin America." He expresses in this article the opinion, that our company, the SCADTA, appears to be the forerunner of more extended German aircraft expansion in Latin America, in this manner giving connection of our Company with the probable development of German international aero service with which he deals in his well written article.

We feel obliged to state that this possible scheme may be very interesting but is not in accordance with the facts. The SCADTA is a Colombian Company which in no way makes exclusive use of German materials, but will at any time employ the very best for its service as long as it has been recommended and approved by its experts as the most convenient and fit for the practical and commercial purposes. If in the first years of our activities we selected German planes, it was due to the circumstances, that at that time German machines were most appropriated to resist a public air-service in the tropics and fight against the many adverse climatic conditions. Furthermore, it was then—commercially speaking—more advantageous to buy in Germany, for the purchase value of the Mark was higher than its commercial rate. Today, things have changed. As you know, German products have increased in price over its similar in other countries, and there are several American airplanes now to be bought cheaper than German airplanes, without considering the lower freights from the States to Colombia. Besides that, American manufacturers have had more ease to develop their products and have achieved great results already.

For some time we have been trying to get American material and have had in mind to ask you the favor of sending us one of the former numbers of your magazine in which there was a list of manufacturers of * * * *. We would greatly appreciate if at the same time you would recommend to us the firms which have obtained the best results with this product.

The SCADTA is highly interested not to be considered as a forerunner of German Aircraft industry only. Our enterprise is strictly an airway-service and therefore it is only in its own benefit to operate its lines with the best means obtainable today, technically as much as economically.

Your readers would probably be interested to know how we feel about this matter, and that we are willing enough to put our experience of long years running to the service of American aircraft and air-service enterprises. A co-operation in these activities could be of mutual advantage for both parties.

(Signed) Illegible
SOCIEDAD COLOMBO-ALEMANA DE TRANSPORTES AEREOS
Baranquilla, Colombia, May 11, 1923

Aeronautical Patents

Granted May 29, 1923

1,456,512 Manufacture of Air Propellers, Eugen L. Muller, Berlin, Germany.
1,456,643 Airplane. Frank R. Maxwell, Jr., Dedham, Mass.
1,456,896 Propeller. William R. MacDonald, Houston, Tex.
1,457,024 Control for Aircraft and the Like. Henry M. Franzen, Los Angeles, Calif.

Granted June 5, 1923

1,457,844 Production of Metal Airscrews or Propellers. Henry Leitner, London, England.
1,457,871 Aeroplane Construction. Michael Bonsiakos, San Francisco, Calif.
1,457,955 Variable Camber Aerofoil for Aircraft. Francis Percy Hyde Beadle, East Boldre, England.

Granted June 12, 1923

1,458,212 Aircraft Landing-Gear-Cord Clamp. Sidney P. Lyon, Dayton, Ohio.
1,458,213 Propeller For Aircraft. Ernest G. McCauley, Dayton, Ohio.
1,458,214 Synchronizing Control Mechanism for Reversible-Pitch Propellers. Ernest G. McCauley, Dayton, Ohio.
1,458,215 Propeller Reversible Blade and Wood-Retaining Ferrule. Ernest G. McCauley, Dayton, Ohio.
1,458,219 Balloon Windlass. Warren D. Burton, Omaha, Nebr.
1,458,645 Metallic Structure for Aircraft. Claudius Dornier, Friedrichshafen, Germany, assignor to Zeppelinwerke Lindau, Gesellschaft mit beschrankter Haftung, Lindaureutin, Germany.
1,458,710 Device for Catching Mail and Fuel by an Airplane in Flight. Stephen W. Kolczewski, Buffalo, N. Y.
1,458,787 Combined Automobile and Aeroplane. Dan Walden, Scalp Level, Pa.

AIRPORTS AND AIRWAYS

This Department is concerned with all civil flying activities such as the establishment of airports, the marking of airways, warnings to airmen regarding obstructions, experiences gathered on flying routes and landing fields, the work of commercial aviation companies and private fliers, the formation of new air transport enterprises, personal paragraphs of general interest, etc.

Communications to this effect, addressed "Airways Editor, Aviation, 225 Fourth Ave., New York City", should be brief, accurate and to the point. They should deal with facts, not with theories or speculations. While American civil flying activities will naturally be given prominence, communications will also be welcomed from Canada, Mexico and other parts of the Western Hemisphere. EDITOR.

N. Y.—Newport Air Service Opened

The New York - Newport Air Service was officially inaugurated at 10:10 a. m. June 27, when the Loening Air Yacht "Grey Lark" piloted by George Rummill and carrying Grover Loening, president of the air line, Richard Watkins of the *New York Herald* and Dwight Perrin of the *New York Tribune* as passengers, left the New York terminal of the service bound for Newport.

The Grey Lark was lifted off the landing barge in front of the Loening hangar at the foot of E. 31st Street, New York, and set in the East River at 9:55. This operation consumed only a couple of minutes. Tackle from a 50 foot boom was fastened to the engine bed of the Grey Lark, the hoisting engine was started and the flying boat swung out over the river and gently set down on the surface. Then the self starter whined, the engine roared in response and Pilot Rummill steerer the flying yacht out between the long piers in front of the hangar like a motor boat and quickly headed across the East River. When about two thirds across the river he turned and headed back into the strong westerly winds and took off after a short run into the wind. Immediately after the boat had left the water she headed north up the East River, and soon disappeared under the Queensborough Bridge. Overhead a Martin Bomber viewed the start from an altitude of approximately 5,000 ft. The whole proceeding was business like and unhurried, and together with a beautiful clear day augured well for the first official trip of the new air line.

It was a very bad day as far as flying weather was concerned, for a gusty southwest wind was whipping the sluggish waters of the East River into movement, and the air above was full of holes and bumps. Pilot Rummill, in order to get out of the bumpy air caused by New York's skyline, climbed steadily until he reached an altitude of 7,000 ft. heading all the while for Newport. Slowly the city became a map, the Sound contracted and soon Bridgeport, New Haven, New London drifted into sight and out again.

Then Newport came into sight and at 11.28 the Grey Lark made an uneventful landing at Codington Cove, where she was greeted by Capt F. T. Evans, U. S. N. commanding the local naval station. The average speed of the trip was 123 m.p.h.

It was a big day in Newport—a very big day, for not only did the summer residents and the business men of the town join in the celebration, but the Army and Navy likewise added their bit to the general welcome to the new service which puts the far off New England city within the metropolitan commuting zone. Credit for the inauguration of the speedy transportation goes to an organization of wealthy Newport people headed by T. Suffern Tailer. The Chamber of Commerce of Newport, the municipal officers, the Army and Navy and the Air Mail Service all cooperated with Mr. Loening to make the venture a success.

At Newport, after the city had recovered from its surprise and trooped to the Government reservation where Capt. Evans had greeted the early birds, people swarmed about the beach. The apprentices in training at the station paraded to the spot and addresses were made by Capt. Evans, Gen. Robert Lee Bullard, commanding the Second Corps Area; Mayor Mortimer A. Sullivan, who read a letter of congratulation sent him by Mayor Hylan; Mr. Loening and Commander Albert C. Read, whose seaplane, NC-4, was the first to cross the Atlantic. All praised the speed of the new service and Commander Read added vivid illustration of its value by relating how he once had reached Newport from New York after nine hours' travel in two trains, two trolleys, and two automobiles.

Later Mr. Tailer gave a luncheon at his home on the Cliff Walk to Mr. Loening, the Army and Navy men, and his associates in backing the venture.

Mr. Loening in addresses at both the official welcome and the smaller luncheon party stressed the certainty of successful commercial aviation if sufficient speed is offered to make it attractive.

Three De Haviland planes, piloted by Maj. J. W. Jones and Lieuts. E. H. Barksdale and Kenneth Garrett, flew to Newport for the official opening of the new line. Despite a rising tide which cramped the space, and a cross wind, they landed took off again successfully on the beach after policemen had cleared it of bathers.

At 5 in the afternoon the Grey Lark soared into the teeth of a rising head wind, and fought its way down Long Island Sound. The return trip was made in 1hr. 52 min.

Why be Careless?

A regrettable accident recently happened in Grant Park, Chicago when, through mere negligence the pilot of a plane allowed a newspaper man who had no experience with airplanes to get into the cockpit of his machine and handle the levers while the pilot started the engine.

The accident happened after the plane had returned from the Indianapolis races with news pictures and was about to take off again. Pilot G. J. McGowan had some trouble starting his engine and allowed Steve O'Connor, a newspaper man, to get into the cockpit to manipulate the switch and throttle. O'Connor apparently opened the throttle more than was necessary and when the engine started, the plane immediately shot forward. O'Connor, frightened for the moment, probably grabbed the control stick and swung the plane around into the crowd that stood close behind the plane, injuring several spectators.

Light Parachutes for Airplanes

An opportunity for commercial airplane companies to equip their ships with light parachutes at a very moderate cost is offered by the Aerial Sales Service, Inc., Fisk Bldg., 57th St. & Broadway, New York.

The chute in question was developed by the French during the war and only weigh 30 oz. It can be folded up in such a small package that it holds in a large pocket.

Chicago Airports

Burmeister Field, at Dempster street and the canal, Chicago, occupying an area of several square blocks, has been sold for a considerable sum to a number of Uptown Chicago sportsmen. The field is to be tile drained and to be rebuilt into an 18-hole public golf course, polo field, automobile race-track and flying field. There will be clubhouses, hangars and places of recreation.

St. Louis Activities

The location of the 110th Air Service Squadron of the National Guard at St. Louis, dependent only upon recruiting the 101 men necessary to complete the force, was briefly announced last week. The selection was made by Adjutant General W. A. Raupp, of the National Guard of Missouri, under authority of the War Department at Washington. The proposed air unit will represent the states of Missouri, Kansas and Nebraska.

The federal government will equip the unit with eight new DeHaviland airplanes, and will build two steel hangars and a machine shop and furnish the necessary equipment in the way of uniforms, photographic apparatus and other accessories and supplies to completely set up the unit. The total cost of this equipment is estimated at $200,000.

The air service unit will be located at St. Louis Field, the site of the international air races to be held Oct. 1, 2 and 3. It was located at St. Louis through the efforts of the St. Louis Air Board, which has charge of preparations for the air races.

B. F. Bush, chairman of the Board of Directors of the Missouri Pacific railroad, has been chosen director-general and Arthur B. Birge general manager of the air races. The St. Louis Aeronautic Corp., with Mr. Bush as president and Mr. Birge as secretary and general manager, was formed to finance the meet. This Corporation has an authorized capital of $200,000, of which one half has already been pledged. The remainder of the stock was to be placed before July 1. The Corporation will convert same to commercial aviation after the October races. Other officers of the Corporation are: W. Frank Carter and Carl F. G. Meyer, Vice Presidents; R. F. McNally, treasurer; W. T. Jones, general counsel and Elsa Schreiber, assistant secretary.

Howard E. Coffin, president of the National Aeronautic Association, Samuel S. Bradley, general manager of the Aeronautic Chamber of Commerce, Hugh W. Robertson, assistant to Mr. Coffin, Luther Bell, secretary of the Aeronautical Chamber of Commerce and Evan J. David visited St. Louis last week and looked over the field where the races are to be held. They were entertained by the Air Board and gave much helpful advice.

Benjamin F. Bush, Director-General of St. Louis Air Races, Oct. 1-3, 1923

Messrs. Bush and Birge accompanied the visitors to Detroit, where they went over the office records of the Detroit races and were entertained by Messrs. Coffin, Rumney, Bush, Waldon, Major Spatz and others.

Work on the grading of St. Louis Field at Bridgeton is proceeding rapidly, despite the wet weather of the last few weeks. The site, comprising ground temporarily leased, as the permanent field, embraces a tract nearly a mile square. The official course for these races covers a triangle of which one angle is in St. Louis County and two angles in St. Charles County. The flyers will cross the Missouri river twice, and will fly directly above that stream for a distance of about 6 miles, a few miles from where it unites with the Mississippi.

Railroad and trolley line officials are busy on proposed extensions of their lines and special service designed to handle the traffic between St. Louis and the field during the National Air Races. The Wabash will lay a considerable amount of extra track at the field for unloading freight and storing equipment. St. Louis County officials have been requested to provide stringent traffic rules to prevent congestion along the highways near the Field or elsewhere along the course.

Pilots Protest Against Bill

AVIATION has received the following copy of a letter addressed June 15 by a number of pilots and other men identified with aeronautical activities in and near Chicago to State Senator John F. Denvir, of Illinois:

Dear sir:—

We, the undersigned, pilots engaged in flying aircraft in the Chicago district, desire to enter a protest against the passage of a certain Bill introduced by yourself in the Illinois legislature which provides that pilots flying aircraft in Illinois operate under heavy bonds and other onerous provisions, on the grounds that:

1. That regulation of flying and aircraft is properly a Federal function.
2. That Congress now has under consideration laws covering the subject.
3. That the development of aviation is of extreme importance and directly concerned with national defense, and that regulatory measures such as the Bill now pending are entirely unnecessary, harmful, and threaten to extinguish the growth of civilian aviation.
4. That State regulation of aircraft would result in a mass of conflicting legislation which would be prohibitive of flying.

Therefore, for the reasons set forth, we ask that the said Bill be withdrawn.

(*Signed:*)—Chas V. Arnold, 63rd & Cicero Ave.; C. H. Paterson, 6804 S. State St.; Daniel Kiser, 4746 Vincennes Ave.; Loren D. Mitchell, 4723 W. Superior St.; C. V. Robinson, 4060 Ellis Ave.; Fred T. Somers, Morton Grove, Ill.; H. E. Richards, 4060 Ellis Ave.; I. J. O'Malley, Aviation Club of Chicago; R. H. Regan (retired pilot), 35 N. Dearborn St.; W. C. Burmeister, 2856 Barry Ave.; F. A. Berg, 773 N. Parkside Ave.

Fast Flight in Petrel

Flying a Huff-Daland "Petrel" equipped with a 90 hp. OX5 motor, George B. Post and Elliot Daland left Ogdensburg at 5:30 a. m. on May 23 and landed at McCook field, Dayton, Ohio at 5:30 that afternoon having covered the 640 miles in a trifle less than eight hours flying. A stop was made at Curtiss Field in Buffalo for gasoline and a late breakfast, and later at the Glenn L. Martin Field in Cleveland at 12:30 p. m., in time for lunch. The run from Cleveland to Dayton was made in a little over two hours flying.

Daland and Post were hurrying to Dayton to witness trials of the TA6, Lawrance motored training plane, which was delivered to the Army by Huff, Daland & Co. recently and has just completed performance tests at McCook Field. Lt. H. R. Harris will fly the TA6 to Ogdensburg shortly where intensive service tests will be conducted during the summer.

German Air Lines

The air lines now operating from and to German airports, which are indicated on the accompanying sketch map of Central Europe, are as follows:

1. Berlin-Danzig-Königsberg. Daily except Sundays. Operated by German Aero Lloyd and Osteuropa-Union. Fare: Mks. 185,000.

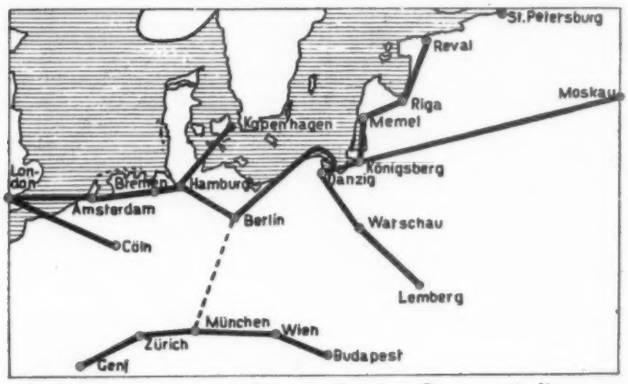
2. Königsberg-Memel-Reval-Riga. Daily except Sundays. Operated by Osteuropa-Union. Fare $28.

3. Berlin-Hamburg-Bremen-Amsterdam-London. Daily except Sundays. Operated by German Aero Lloyd and Daimler Airway. Fare £28/10sh.

4. Geneva-Zurich-Munich. Daily except Sundays. Operated by Transeuropa-Union. Fare 100 Francs (Swiss).

5. Munich-Vienna-Budapest. Daily except Sundays. Operated by Transeuropa-Union. Fare: 85 Francs (Swiss).

6. Königsberg-Smolensk (or Kovno)-Moscow. Tuesdays and Fridays for official courriers only; Thursdays open to the



Sketch map of Central Europe, showing German air lines now in operation

public. Operated by "Deruluft" (German-Russian Air Transport Co.) Fare: £22.

7. Hamburg-Copenhagen. Daily except Sundays. Operated by Danske Luftfartselskab and German Aero Lloyd. Fare: 80 Kroner (Danish).

8. London-Brussels-Cologne. Daily except Sundays. Operated by Instone Air Line. Fare: £5/19 sh./6 d.

9. Danzig-Warsaw-Lemberg (Lwoff). Daily Except Sundays. Operated by the Polish Aero Lloyd. Fare: 350,000 Pol. Marks.

The Osteuropa-Union is an operating combine which includes the following air transport firms: German Aero Lloyd, Berlin ; Junkers Luftverkehr, Berlin; Danziger Luftpost, Danzig; Polish Aero Lloyd, Warsaw; Latvian Air Transport Co., Riga; and Aeronaut A. G., Reval.

The Transeuropa-Union is a similar operating combine, and includes the following air carriers: Junkers Luftverkehr, Berlin; Rumpler Luftverkehr, Munich; Ad Astra-Aero A. G., Geneva; Oesterreichischer Luftverkehr A. G., Vienna; and Aero Express R. T., Budapest.

According to newspaper reports, the Königsberg-Moscow air line is to be extended, via Kharkoff and Tiflis, to Teheran, Persia. A few experimental flights have already been successfully accomplished on this route, but whether a regular passenger service has been inaugurated as yet is not known.

Mid-West Airways Corp.

The Mid-West Airways Corp. of Monmouth, Ill., reports that they are doing a profitable business in cross-country flying. A large number of special flights from the Monmouth Field to the Mississippi River and return at $5.00 a passenger are also being made. Pilot John Livingston operates a 5-passenger Bréguet on these flights.

Besides cross-country flying, the corporation also conducts a student training school, and is Illinois representative for the Curtiss Aeroplane & Motor Corp. The officers are I. F. Daines, President; Fred B. Pattee, Vice President; C. W. Buchanan, Secretary and Treasurer; C. G. Jenks, General Manager; John H. Livingston, Chief Pilot.

Successful Aerial Rally

On June 9 and 10 a remarkably successful Aerial Rally was held at Pine Valley, N. J. under the auspices of the Aero Club of Pennsylvania and the Philadelphia Chapter of the National Aeronautic Association. A wind reaching at times a velocity of 47 m.p.h. made it necessary to postpone until Sunday afternoon most of the events scheduled for Saturday, but did not prevent the arrival on scheduled time of six ships of the 104th Observation Squadron of the 29th Division of the National Guard from Logan Field, Baltimore, under the command of Maj. Paul J. Burwell, and composed of Capt. W. D. Tipton, Capt. C. A. Masson, Capt. G. Cobb, Lieuts. Thomas Bourne, Kent D. Currie, H. Bohlman and James B. Hooper. During the most severe part of the gale, Lieut. Burdette S. Wright accompanied by Col. Harold E. Hartney arrived from Bolling Field, Washington in a DH. Lieut. Louis M. Kolb and Frederick T. Holl of Parkesburg, Pa. landed in the field in a Curtiss Jenny. Former Capt. D. H. Robertson of the British Royal Air Force did some low flying stunts in a Sport Farman, which were repeated later by Robert P. Hewitt of Philadelphia, flying the 1923 Model Sport Farman owned by the Ludington Exhibition Co. of Philadelphia. Capt. E. D. C. Herne, noted for his sky-writing performances, gave an exhibition of the art of writing in the air.

On Saturday evening a dinner was given to the visiting fliers in the Club House of the Pine Valley Flying Club. On Sunday, Captain Herne established unofficially a local speed record by flying to Atlantic City and return in 35 min. While in the afternoon the 10 min. altitude contest was run off in which the English Captain performed most creditably, taking the Eldridge-Simmerman Trophy while rising 8,000 ft. G. S. Ireland, manager of the Pine Valley Field, reached an altitude of 7600 ft. while the Sport Farman piloted by Hewitt, surprised everyone by attaining an altitude of nearly 5,000 ft. in 10 min.

In exhibition of accurate landing, the best performance was put up by Hewitt, again in the Sport Farman, when he landed 4 ft. 4¼ in. from the small mark. Robertson in another Farman brought his machine to a stop 11 ft. from the flag, and Kolb of Parkesburg came to rest a distance of 15 ft. from the mark.

The Aerial Rally was held for the purpose of demonstrating to Philadelphians the urgent need of a landing field within access of the center of the city. A comparison was frequently made by spectators during the Rally of the condition of Philadelphia which has three fields available of more than an hour's distance from the center of the city and the state of affairs in Parkesburg, Pa., a town of 3,000 inhabitants, which has in active operation a municipal landing field fully equipped for night flying.

The Baltimore Squadron took off honors in a rifle shooting contest, first prize going to Lieutenant Bourne and the second to Captain Tipton. At the end of the afternoon, the Maryland fliers returned to Logan Field without accident.

Numerous passengers were taken for short hops.

It is generally felt by those interested in aviation in Philadelphia that the Rally gave to the drive for a landing field the greatest boost it has yet received. The Aerial Rally Committee in charge of the two days program consisted of W. Wallace Kellett, Chairman; G. Sumner Ireland, Joseph A. Steinmetz, Barclay H. Warburton, Jr., C. T. Ludington, W. H. Sheahan, Roy G. Miller, Dr. Thoas. E. Eldridge, Hollinshead N. Taylor, S. S. Brenner, Samuel B. Eckert, Robert P. Hewitt, J. Sidney Owens and V. C. Dallin.

Planes at Indianapolis Rally

Among the many racing enthusiasts who flocked to the Indianapolis speedway decoration day were Dr. Elmer E. Vaughen and his brother, who flew there from Chicago with Nimmo Black in 2 hr. Black went to Indianapolis to bring back news pictures of the great race for a local newspaper. He left Indianapolis at 5:12, just after Milton had crossed the finishing line, and arrived at Grant Park at 7 o'clock.

Planes had come to the races from all parts of the country. Among them were eight Army planes, a Standard and a Fokker, Buck Weaver with Wm. Brock's Breguet, and many other private and newspaper planes. Mrs. Metzger, of the Aero Club of Illinois, also made use of the air route.

U. S. ARMY AND NAVY AIR FORCES

U. S. ARMY AIR SERVICE

General Patrick Gets His Wings

Secretary of War Weeks formally announced on June 26 that Maj. Gen. Mason M. Patrick, Chief of Air Service, has duly qualified as an airplane pilot at the age of sixty years.

"We used to hear that a man more than thirty years of age should not attempt flying, but General Patrick has won his wings at twice that age," said Mr. Weeks, who was obviously proud of the achievement of the Chief of Air Service.

Secretary Weeks added that General Patrick had done a great deal of flying as a passenger and observer, and now had passed all the tests required of an officer to become a full-fledged pilot. General Patrick was transferred to the Air Service from the Engineers Corps in 1921. He began taking flying lessons a few months ago.

Official Photo, U. S. Army Air Service

General Patrick, Chief of Air Service receives the Aviator's Wings from Lt. Col. J. E. Fechet, Chief of Training & War Plans Division, Air Service

The entire personnel of the Air Service is happy over General Patrick's acquisition of flying wings, pilots generally contending that no matter how excellent an officer's other qualifications, unless he knows actual flying he cannot have the real sympathy of men who make a business of it.

In honor of this auspicious event, Air Service officers stationed in the Office of the Chief Air Service in Washington tendered General Patrick a luncheon at the Army and Navy Club. To commemorate the event, the officers presented their Chief with a set of silver wings, Lieut.-Col. James E. Fechet, Chief of the Training and War Plans Division, making the presentation. Colonel Fechet congratulated the General on being the first Major-General in the Army who had ever qualified as an airplane pilot and the only officer in the Army at the age of sixty to receive this rating.

General Patrick in his response thanked the officers for their good will and loyalty and stated that when he took up the practice of flying he had no idea in mind of seeking any personal glory, his sole reason for attempting to learn to fly being to gain a better conception of the skill required in actual flying and in order that he might have a greater appreciation of the dangers incident thereto.

Maj. Herbert A. Dargue, who was General Patrick's instructor, and who has accompanied him on many inspection trips via air, told the officers assembled what an apt pupil General Patrick had been and expressed his confidence in the General's ability to pilot an airplane.

Plane Refueled in Flight

An airplane in flight was refueled for the first time in the history of aviation near San Diego, Calif. on June 25.

Flying at a speed of 90 m.p.h. Lieuts. Hines and Seifert guided their craft above that flown by Capt. Lowell Smith and Lieut. John P. Richter, ran down a forty-foot steel wire encased rubber hose and within two minutes the feat was done.

The four officers many times in practice had succeeded in getting the pipe from one plane to another, but never before had the gasoline been sent through. A few drops scattered over the hot exhaust pipes would have spelled disaster for at least one of the planes. Finally the officers regarded themselves as "letter perfect" and ready for the hazardous attempt.

The tryout was in preparation for an attempt of Captain Smith and Lieutenant Richter to smash all records for endurance. They plan to go up and remain aloft four days and nights which they will only be able to achieve by refueling in the air. For this purpose from eight to twelve contacts will have to be made in flight.

Preliminary refueling tests developed one fault that was remedied quickly. That was the inability of the fueling plane pilots to haul the hose back into the fuselage. The rush of wind under the plane caused the heavy hose to whip around like a piece of string. It required expert piloting on the part of the pilots to get the two planes, thirty-five feet from wing tip to tip, together, and then throttle down so that the hose could be caught and fastened to the tank.

In the preliminary tests Seifert was compelled to make a landing with the 40 ft. hose dangling under his machine. It was found that by enlarging the hole in the bottom of the fuselage of the fueling ship it could be hauled aboard more easily.

Army Orders

Maj. William L. Moose, jr., A.S. relieved as student from the Command and General Staff School, Ft. Leavenworth, Kan.; assigned to duty with Organized Reserves, Second Corps Area, New York.

Staff Sergt. Grover C. Goff, 24th Pursuit Sqd. A.S. relieved from duty in Panama Canal Dept.; transferred to 1st Pursuit Group, A.S. Selfridge Field.

First Sergt. Bernard Vitters, 25th Bomb. Sqd. A.S. to be retired at Ft. Hamilton, N. Y.

Tech. Sergt. William C. Thompson, relieved from duty with 25th Bomb. Sqd. A.S. France Field, C. Z.; transferred to 10th School Group, Kelly Field.

The following named officers are transferred from the continental United States to the Hawaiian Dept. and are to sail for Honolulu about Aug. 4, 1923: Maj. Robert E. M. Goldrick; First Lieuts. Ray A. Dunn, Grandison Gardner, Lloyd C. Blackburn, William C. Goldsborough, Arthur C. Hamilton, Arthur I. Ennis, Alfred L. Jewett, Ray G. Harris; Sec. Lieuts. George O. Robertson, Donald W. Norwood.

Leave of absence of two months is granted First Lieut. Harry H. Mills, A.S.

The Death of a Popular Officer

In the sudden death of Maj. Thomas Duncan, A.S., the Army lost one of its most popular young officers—a man who had a smile and a pleasant word for everyone with whom he came in contact, a cheery disposition, a man you were always glad to meet with a return smile because one could not do otherwise in his presence. And fate was so unkind as to take such a man away from our midst! Major Duncan was but 41 years of age, and, if there is any truth in the saying that "the good die young," his departure from this world with the best years of his life yet before him is a striking example.

Major Duncan, who was on duty in the Militia Bureau of the War Department, had journeyed out to Bolling Field in company with a civilian on duty in his office, Irvin H. Krupp, for the purpose of taking a practice flight. Shortly after taking off and when at the extreme end of the field the airplane suddenly crashed to the ground, and before help could arrive both occupants were burned to death, the plane having burst into flames immediately after the crash.

Major Duncan was the son of the late Brig. Gen. Joseph W. Duncan, who, shortly before his death some years ago, served a tour of duty in the War Department General Staff. The General was one of the most courteous and kindly gentlemen one could meet and the writer, whenever he saw Major Duncan, often thought of the old adage—"Like father, like son." The deceased, who left a wife and baby, was born on Feb. 5, 1882, at Vancouver Barracks, Washington. He attended the United States Military Academy at West Point but did not graduate from that institution. He was, however, commissioned in the Coast Artillery Corps from civil life on April 11, 1905, and graduated from the Coast Artillery School in 1912 and from the Army School of the Line in 1921.

During the war he was detailed in the Air Service, holding the rank of Lieutenant-Colonel. His first assignment in the Air Service was as Executive Officer of Kelly Field, Tex., during the stirring times at that field when every effort was being bent to train as many fliers as possible for the front lines in France. He served at this field from Nov., 1917, to June, 1918, and then served as Commanding Officer at Fairfield, Ohio, until September, 1918, when he was ordered to Washington, D. C., for duty as Chief of the Operations Section. From Dec. 29, 1918, to Jan. 27, 1919, he was the commanding officer of Eberts Field, Lonoke, Ark. He was then transferred to Carlstrom Field, Arcadia, Fla., where he commanded the Primary Flying School until Aug. 6, 1920. After attending the General Service School at Fort Leavenworth, Kans., for one year, he was assigned to duty with the Organized Reserves, with headquarters at Fort Sam Houston, Tex. From October, 1922, until the date of his death he was on duty in the Militia Bureau in Washington, where he performed the work of organizing Air Service activities in the National Guard of the country.

On June 26, 1922, the Commanding Officer of the Eighth Training Center, Fort Sam Houston, Tex., in a letter to the Commanding Officer of the 8th Corps Area, commended Major Duncan for his work during an instruction period for Reserve Officers, stated: "This officer acted as Executive during this period. His services were exceptionally efficient and this, coupled with his pleasing personality, had more to do with the success of this meeting than that of any other officer connected with it. He is especially adapted for work of this kind and is a rather unusual young officer."

AVIATION sends its condolence to his bereaved family and to his many sorrowing friends.

The Fire Extinguishers of McCook Field

"There are many ways of practicing economy and we suspect that some one has been saving on his dry cleaning bill," writes the McCook Field correspondent of *Air Service News Letter*. "It appears that a request came to McCook Field recently for some means of rendering carbon tetrachloride (fire extinguishing fluid) unfit for cleaning purposes. The problem was handed over to the Materials Section, with the result that tests were made on various dyes and a dyeing solution recommended which, when added to the fluid, would cause it to stain any material with which it came in contact, a bright red."

Medical Assistance by Air

The prompt delivery by air of anti-toxin for dressing a gun shot wound from which tetanus was developing, probably saved the life of an American woman explorer in the wilds of Panama.

Prof. Gage of the University of Michigan and Mrs. Gage had been in Chiriqui several months collecting snakes and insects. While near Progresso she was shot in the hand accidently by a hunter, and through the lack of medical attention tetanus set in. The next day telegraphic requests were received in Panama that assistance be rushed to the noted professor's wife. The Army authorities were notified and a Martin bombing plane and two DHB's were hurriedly dispatched from France Field at one o'clock Sunday afternoon. The DeHavilands were piloted by Lieuts. Roland Birnn and Morgan, respectively, one of them carrying Capt. L. Valentyne, flight surgeon. Capt. Andrew Smith, flight surgeon, left shortly after in a Martin bomber piloted by Lieut. L. L. Beery.

Although much slower than the smaller DeHavilands and despite the fact that they left France Field later, Lieutenant Beery and Captain Smith, by taking a direct course, set their big plane down at David in 2 hr. 30 min., arriving only half an hour behind the DeH's, which took a round-about course. The aviators had a difficult job in spotting the place where Mrs. Gage was located, but finally managed to get the serum to her by wrapping it in waste and dropping it from the air just before sunset.

The aviators waited on the landing field at Divala while Mrs. Gage, after the serum was injected, made the trying 18-mile trip on horseback. Upon her arrival she was placed in a Stokes litter used in the U. S. hospital planes and settled as comfortably as possible in Lieutenant Berry's bombing plane. Prof. Gage and Dr. Smith accompanied the patient on the aerial journey to Balboa. An Army ambulance promptly took Mrs. Gage to the Ancon Hospital.

Student Officers Visit McCook Field

McCook Field had a warn welcome for the twenty-two Air Service officers comprising the staff and student officers from the A.S. Tactical School, Langley Field, who arrived in two squadrons of DH4B airplanes. They remained for five days during which time they visited Wilbur Wright Field and became acquainted with the activities of the Engineering Division and with methods for developing new equipment for various activities, which latter function was the special purpose of their visit. Upon leaving McCook Field they visited the First Pursuit Group at Selfridge Field, Mt. Clemens, Mich. The entire trip will be made over the model airways route, with stops at Washington, D. C. Moundsville, Dayton, Mt. Clemens and Cleveland, returning via Moundsville and Washington. The route is approximately 1,800 miles long.

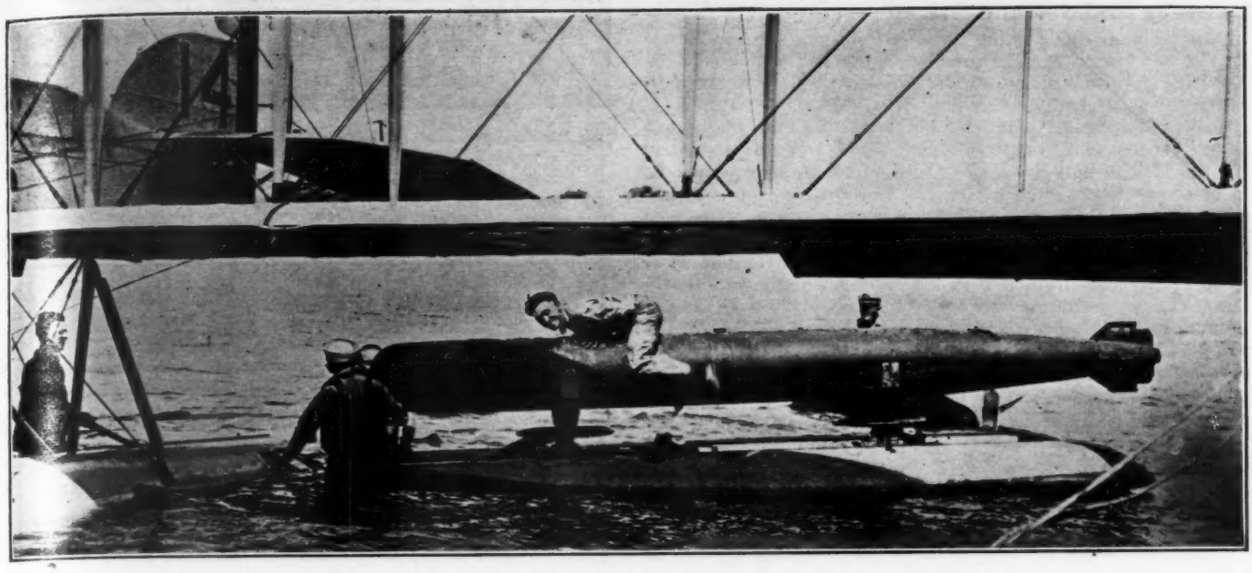
The officers comprising the party were: Maj. T. DeWitt Milling, in charge of the Tactical School, Capt. L. R. Knight and Lieuts. H. W. Cook, Rex K. Stoner, and H. W. Heisen, staff of the school; and the following student officers: Majs. J. H. Jewett, W. C. McChord and H. B. Clagett, Capts. W. B. Gates, G. S. Warren, E. W. Hill, A. M. Guidera, H. V. Hopkins, F. M. Bradley, H. J. Houghland, R. Beam, and 1st Lieuts. G. P. Johnson, C. W. Ford, F. O. D. Hunter and C. F. Wheeler.

Maj. Robert Coker and Capt. L. B. Jacobs, who were detained by a forced landing, arrived later.

Award of D.S.C.

A distinguished service cross has been awarded by the War Department to the following-named officer:

Martinus Stenseth, first lieutenant, Air Service, then first lieutenant, 28th Aero Squadron, Air Service. For extraordinary heroism in action Oct. 22, 1918, over the Argonne Forest, when he went to the rescue of a French plane attacked by six enemy Fokker planes with twelve additional enemy planes hovering in reserve. Attacking the enemy with vigor, single handed, he drove down and destroyed one enemy plane and put to flight the remainder. His gallant act in the face of overwhelming odds proved an inspiration to the men of his squadron.



Official Photo U. S. Navy

Loading a torpedo on a Navy torpedo plane. The torpedo is floated under the plane and then raised to the securing position where it is carried into the air

Round the World Air Survey

The Secretary of War has authorized General Patrick to detail two Air Service officers to make a preliminary survey of the route for the proposed around-the-world flight. These officers will make a reconnaissance of the coast of Alaska and the Aleutian Islands and touch Japan. The general plan is to pick up on the Asiatic continent the route followed by British pilots on their flight from London to Australia.

The around-the-world-flight has not yet been formally authorized, and Congress probably will be asked for a specific appropriation to cover the expense.

U. S. NAVAL AVIATION

Navy Personnel Situation

Recent communication from the Bureau of Navigation calls attention to the fact that there will be an increasing shortage of personnel in the Navy for the next six months due to the excess of expirations of enlistments during that period over the normal rate. It is estimated that at the end of the calendar year the Navy will be from 8 per cent to 10 per cent short of its authorized complement. In spite of the fact that this shortage has been progressive of late, Naval Aviation has been generously dealt with. At the present time there is an excess of 400 men in the combined aviation units. During the next six months Naval Aviation will be required to reduce so as to bear its proportion of the shortage.

Orders to Officers

Mach. George L. McMullon, USN—Detached Naval Air Station, Pensacola, Fla.; to Aircraft Squadrons Battle Fleet.

Lt. Henry M. Mullinnix, USN—Detached Mass. Institute of Technology, Cambridge, Mass.; to Naval Air Station, Pensacola, Fla.

Lt. William N. Updegraff, USN—Detached USS Mercy; to Naval Air Station, Pensacola, Fla.

Lt. (jg) Herbert C. Behner, USN—Detached Aircraft Squadrons, Battle Fleet; to Naval Air Station, Pensacola, Fla.

Lt. (jg) Homer N. Wilkinson, USN—Detached Torpedo & Bombing Plane Squadron, Scouting Fleet; to Naval Air Station, Pensacola, Fla.

Bosn. John T. Sunderman, USN—Detached Aircraft Squadrons, Battle Fleet; to Naval Air Station, Anacostia, D. C.

Mach. Axel E. Tangren, USN—Detached Torpedo & Bombing Plane Squad. 1, Scouting Fleet; to Naval Air Station, San Diego, Calif.

Lt. Comdr. Charles G. McCord, USN—Detached USS Camden; to charge of Aeronautical Test Laboratory, Washington, D. C.

Lt. Scott E. Peck, USN—Detached Naval Air Station, San Diego, Calif.; to USS Relief.

Lt. Frank N. Sayre, USN—Detached USS S35; to Naval Air Station, Pensacola, Fla.

Bosn. Grover C. Gittins, USN—Detached Naval Air Station, San Diego, Calif.; to Naval Air Station, Lakehurst, N. J.

Lt. Comdr. Sydney M. Kraus, USN—Detached Bu. Aeronautics; to duty with Naval Inspector of Aircraft Friedrichshafen, Germany.

Lt. Adolph P. Schneider, USN—Detached Naval Air Station, San Diego, Calif.; to Aircraft Squadrons, Battle Fleet.

Ens. Delbert L. Conley, USN—To USS Langley.

Ens. Arnold J. Isbell, USN—Detached USS Burns; to Naval Air Station, Pensacola, Fla.

Mach. Robert T. Cupples, USN—Detached Naval Air Station, Pensacola, Fla.; to Aircraft Squadrons Scouting Fleet.

Mach. Douglas H. West, USN—Detached Naval Aircraft Factory, Philadelphia, Pa.; to USS Wright.

Lt. Comdr. Glenn A. Smith, USN—Detached Aircraft Squadrons Battle Fleet; to Naval Air Station, Hampton Roads, Va.

COMING AERONAUTICAL EVENTS

DOMESTIC

Oct. 1-3 — National Airplane Races, St. Louis, Mo.
Late Fall — Curtiss Marine Flying Trophy Race

FOREIGN

July 20-Aug. 12 — International Aero Exhibition, Gothenburg, Sweden
Aug. 3-31 — Sailplane Meet, Rhoen, Germany
Aug. 5-26 — Sailplane Meet, Vauville, near Cherbourg, France
Sept. 23 — Gordon Bennett Balloon Race, Brussels, Belgium
Sept. 28 — Schneider Maritime Aviation Trophy Race, Cowes, Isle of Wight, England
Dec. 1 — Entries close for French Engine competition

Learning Radio While Asleep

A novel plan for teaching radio code to student naval aviators at the Naval Air Station, Pensacola, has been under trial recently, and, according to reports received, gives every indication of being both practical and valuable.

The plan is to teach student aviators to receive radio code at high speed while they are asleep. The advantage claimed for the idea is that it enables the student to acquire facility in receiving the code in a fraction of the time that is ordinarily required. In recent tests made, students who have been particularly slow in making progress with radio practice have been saved from being dropped from the class at Pensacola. The idea originated in the experience of Chief Radio Mate Phinney, who is in charge of radio instruction in the ground school at the Air Station. In asking for a trial of his plan Phinney cited his own case, and told of how in practicing receiving at the rate of thirty five words per minute he fell asleep while the mechanical sender which he was using continued to send messages to him. When he awoke Phinney claimed that he was able to receive at the rate of thirty-five words, while previously he had been unable to catch more than twenty or twenty-five words. He advanced the theory that in a few hours of slumber his subconscious mind had been trained to the higher speed.

When the proposition was first made to apply the test to student naval aviators in the ground school at Pensacola, it was met with amused skepticism. But a practical test has convinced the skeptics that the plan is workable. The matter of acquiring a speed of twenty words per minute has ever been a bugbear to students at the training station, and in a number of cases has seriously hampered their progress. This speed must be reached by the end of the six months course in order for the student to receive a designation as pilot. In the last class to enter the ground school several students proved to be difficult subjects, and as a last resort the attempt was made to boost them to the required speed by sending radio messages to them while they slept.

Before turning in at night the student adjusts the receivers on his head which are used in the regular class. A regular watch is stood throughout the night by expert operators on the sending key and throughout the night they send at high speed — about ten words in excess of the students capacity to receive. It has been found that in his conscious hours the following day the student is able to receive messages at the speed they were sent to him while he was asleep.

In discussing his method Phinney claims that it has educational value in that memory tests which he has made have given astonishing results. Long passages of literature have been committed to memory in this manner that would otherwise have taken laborious effort extending over a long period of time.

ZR1 Ready for Shed Trials

Progress on the Navy rigid airship ZR1 has reached an advanced stage within the past few weeks and, unless unforeseen conditions arise to prevent the trials of this huge airship will begin the early part of July. According to recent reports from the Naval Air Station at Lakehurst, the work on the hull of the ZR1 was completed the fifteenth of June, and there remains only the power equipment to be installed and minor finishing work to be completed before the shed tests begin.

The control car and two of the power cars for the ship are in Lakehurst, and the other four power cars will be shipped from the Naval Aircraft Factory at an early date. It is estimated that after the ship has been completed in every detail three weeks will be necessary at a minimum for shed trials. During this time every feature of the rigid will be tested under conditions approximating as nearly as possible actual flight operation.

There will be trials run with every man of the crew at his post and all engines in operation. The ship will be inclined at various angles to test balance and other similar trials will be conducted. There is at present sufficient helium on hand at the Lakehurst Station for inflation of the twenty gas cells in the huge structure, and deliveries of the gas are being made at a rate to insure no delay in operation. It is planned to christen the ZR1 with appropriate ceremonies when she is ready to take the air, probably some time in August.

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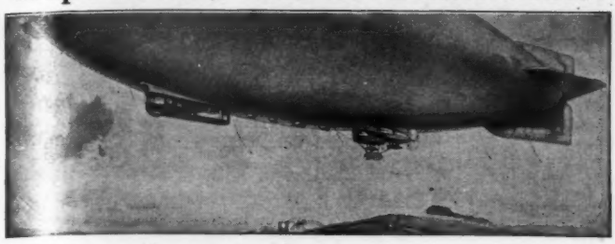

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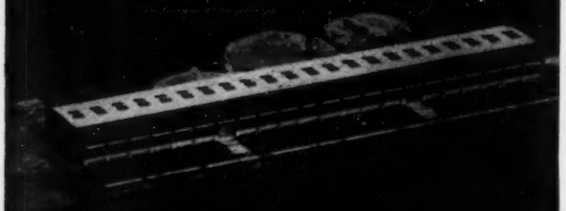

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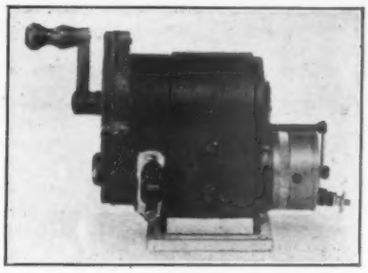

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